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Electronic Instrumentation
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1 April 1983

To: GTE, Sylvania, Cutty Sark

The following pages of this manual have been changed to reflect the requirements of GTE Specification 02-1244208 and Eaton Corporation overall assembly P/N 296416-1.

This mainframe manual is part of overall assembly 296416-1 which includes a modified mainframe assembly 296417-1.

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1. Using pen and ink, page ii, change paragraph 4-43 from "0.1 to 100 Hz BCD Decade Boards A2A2 through A2A5" to "10 to 100 Hz BCD Decade Boards A2A2 through A2A3".
2. Using pen and ink, page v, make same change as in step 1 to "Figures 4-15 and 4-16".
3. Using pen and ink, page 3-3, Table 3-1, change Key 5 from "10 HZ - 1.0 HZ" to "100 HZ - 10 HZ".

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AILTECH

3600D11 MAINFRAME AND
3600E1 FREQUENCY EXTENDER

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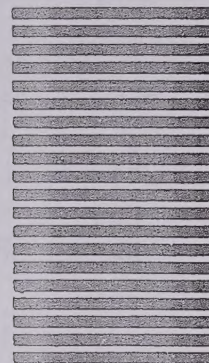
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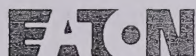
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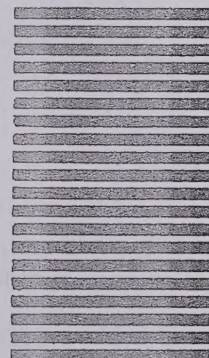


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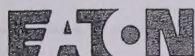
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OPERATION AND MAINTENANCE MANUAL

AILTECH 360 FREQUENCY SYNTHESIZER

360D11 MAINFRAME AND
3600E1 FREQUENCY EXTENDER



APRIL 1977
REVISED NOVEMBER 1979
REVISED JANUARY 1983

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FOREWORD

The AILTECH 360 Frequency Synthesizer manual is a complete handbook consisting of operation and maintenance of the 360D11 Mainframe and 3600E1 Frequency Extender.

The AILTECH 360 Frequency Synthesizer manual contains general information relating to the operational characteristics of the instrument and information required to service and maintain the instrument. Included are schematics, troubleshooting procedures, and replaceable parts list.

The following manuals are required for a complete set.

<u>Model</u>	<u>Manuals</u>
360	360D11 Mainframe P360180E1 RF Section
360M	360D11 Mainframe P360180E1 RF Section PM3602 AM/FM/Phase Modulator
361	360D11 Mainframe P3601.8E1 RF Section
361M	360D11 Mainframe P3601.8E1 RF Section PM3602 AM/FM/Phase Modulator
362	360D11 Mainframe P3602.0E1 RF Section
362M	360D11 Mainframe P3602.0E1 RF Section PM3602 AM/FM/Phase Modulator

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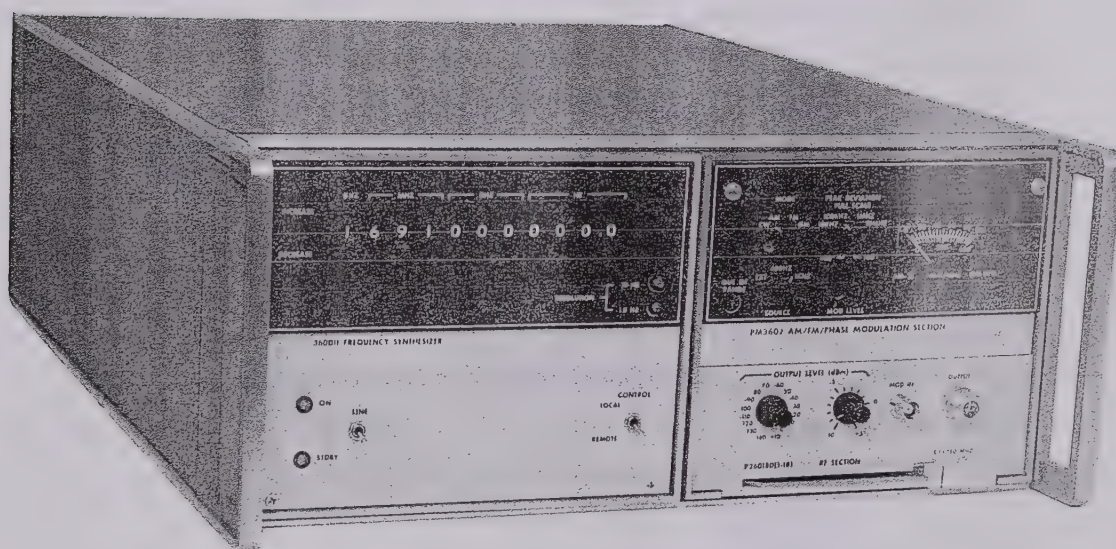
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AILTECH 360D11 Mainframe

CHAPTER 1

GENERAL INFORMATION

1-1. INTRODUCTION

1-2. The AILTECH 360D11 Mainframe and 3600E1 Frequency Extender are used with the P360 Series RF Sections and PM3600 Series Modulation Sections. When fully assembled, these items make up a Frequency Synthesizer whose frequency range depends upon the RF Section installed with modulation capabilities determined by the particular modulation section in use. Table 1-1 lists the available options and synthesizer configurations. System specifications are listed in Table 1-2.

1-3. This manual contains installation, operation, and maintenance information for the AILTECH 360D11 Mainframe and the 3600E1 Frequency Extender. It is divided into five chapters as follows:

- a. Chapter 1, GENERAL INFORMATION, provides brief physical and functional descriptions of the mainframe and frequency extender, pertinent specifications, a list of component subassemblies, and a list of test equipment required for maintenance.
- b. Chapter 2, INSTALLATION, provides information necessary for unpacking, setup, and initial checkout.
- c. Chapter 3, OPERATION, provides information on how to operate the mainframe and frequency extender in conjunction with the RF section and modulation section to obtain desired output. It also contains simple maintenance procedures for a user to follow should the equipment appear to malfunction.
- d. Chapter 4, MAINTENANCE, provides all information necessary to troubleshoot, repair, and adjust the mainframe and frequency extender.
- e. Chapter 5, REPLACEABLE PARTS LIST, provides a complete list of all parts contained in the mainframe and the frequency extender.

TABLE 1-1. 360 SYNTHESIZER CONFIGURATIONS AND AVAILABLE OPTIONS

Synthesizer Configuration	Model					
	360	360M	361	361M	362	362M
360D11 Mainframe	•	•	•	•	•	•
3600E1 Frequency Extender	•	•	•	•	•	•
P360180E1 180 MHz RF Section	•	•				
P3601.8E1 1800 MHz RF Section			•	•		
P3602.0E1 2000 MHz RF Section					•	•
PM3601 AM Modulation	•		•		•	
PM3602 AM/FM/ ϕ Modulation		•		•		•
Available Synthesizer Options						
Option 001, Increased Resolution	•	•	•	•	•	•
Option 002, Frequency Standard, $\pm 3 \times 10^{-8}/24$ hrs.	•	•	•	•	•	•
Option 003, Frequency Standard, $\pm 1 \times 10^{-9}/24$ hrs.	•	•	•	•	•	•
Option 004, 50-400 Hz Operation	•	•	•	•	•	•
Option 005, GPIB Operation	•	•	•	•	•	•
Option 006, Rack Mount Adapter	•	•	•	•	•	•
Option 007, Slide Adapter Kit	•	•	•	•	•	•
Option 008, Transit Case	•	•	•	•	•	•
Option 012, 10kHz option for P3602.0E1 RF Section					•	•
Option 181, 150 dB Attenuator	•	•				
Option 182, 130 dB Attenuator			•	•		
Option 183, 130 dB Attenuator					•	•
Service Accessory 299252-001	•	•	•	•	•	•

TABLE 1-2. SYSTEM SPECIFICATIONS

FREQUENCY CHARACTERISTICS							
	360	361	362				
Frequency Range	.01-179.99 ... MHz	1.0-1799.99 ... MHz	1.0-1999.99 ... MHz (.01-1999.99 ... MHz, 012 Option)				
Frequency Resolution	1 Hz 0.1 Hz with Main Frame Option 001	Output Frequency Standard Mainframe Option 001 ≤ 60 MHz ≥ 60 MHz	1 Hz 10 Hz	0.1 Hz 1.0 Hz			
Frequency Accuracy and Stability	Same as reference oscillator (±3 x 10 ⁻⁸ /24 hours with mainframe option 002, ±1 x 10 ⁻⁹ /24 hours with mainframe option 003)(4)).						
Harmonics	< -30 dBc, 1.0 to 180 MHz	< -20 dBc, CF > 3 MHz ⁽³⁾ < -15 dBc, CF < 3 MHz ⁽³⁾					
Sub Harmonics and Multiples(f/2,3f/2,etc.)	N/A	< 900 MHz, N/A > 900 MHz, < -20 dBc	< 1000 MHz, N/A > 1000 MHz, < -20 dBc				
Signal to AM Noise ⁽²⁾	> 84 dB	> 70 dB					
Signal to ⁽²⁾ Phase Noise Ratio	See Spectral Purity						
Frequency Switching Time to be within 0.01 radians of final phase for 11-digits of frequency change	Programming Mode	μP Time	Settling Time	Total Switching Time			
	BCD Parallel	0	20μs	20μs ⁽¹⁾			
	GPIB(Option 005)	19.9ms	20μs	20ms			
1. For 1800 & 2000 MHz units, switching time is < 80 microseconds for a frequency step from above 10 MHz to below 10 MHz. For 2000 MHz unit, Option 012, switching time is < 25ms for a frequency step across 1 MHz. 2. Measured in a ±15 KHz band, excluding a ±0.5 Hz band centered on the carrier. 3. For output levels below +5 dBm with 182/183 attenuator options 4. After 72 hours warm-up.							
SPECTRAL PURITY							
Guaranteed SSB Phase Noise in a 1 Hz BW, including effects of internal standards; options 002 or 003							
OUTPUT FREQUENCY			SPURIOUS SIGNALS dBc	PHASE NOISE AT OFFSET FREQUENCY			
360 (MHz)	361 (MHz)	362 (MHz)		1 KHz dBc/Hz	10 KHz dBc/Hz	100 KHz dBc/Hz	S/N dBc
.01-60	1-60	1-60 ⁽³⁾	-100	-121	-126	-131	-78
—	60-80	60-100	-98	-119	-124	-129	-76
60-180	80-160	100-200	-92	-113	-118	-123	-70

TABLE 1-2. SYSTEM SPECIFICATIONS (Cont)

SPECTRAL PURITY (Cont)							
OUTPUT FREQUENCY			SPURIOUS SIGNALS dBc	PHASE NOISE AT OFFSET FREQUENCY			
360 (MHz)	361 (MHz)	362 (MHz)		1 KHz dBc/Hz	10 KHz dBc/Hz	100 KHz dBc/Hz	S/N dBc
—	160–320	200–400	–86	–107	–112	–117	–64
—	320–900	400–1000	–80 ⁽¹⁾	–101	–106	–111	–58
—	900–1800	1000–2000	–74 ⁽²⁾	–95	–100	–105	–52
(1) (361) For 850–899.99 . . . MHz, a spurious could appear from 1250–1350 MHz, < -60 dBc (362) For 950–999.99 . . . MHz, a spurious could appear from 1050–1150 MHz, < -60 dBc (2) (361) For 1400–1480 MHz, a spurious could appear from 1150–1290 MHz, < -55 dBc. For 1700–1799.99 . . . MHz, a spurious could appear from 1200–1450 MHz < -60 dBc. For 1600–1799.99 . . . MHz, a spurious could appear 610 ±1 MHz below the carrier, < -55 dBc. (362) For 1600–1680 MHz, a spurious could appear from 1470–1550 MHz, < -55 dBc. For 1900–1999.99 . . . MHz, a spurious could appear from 1700–1950 MHz, < -60 dBc. For 1800–1999.99 . . . MHz, a spurious could appear 610 ±1 MHz below the carrier, < -55 dBc. (3) .01–60 for 012 option.							
OUTPUT CHARACTERISTICS							
	360		361		362		
Level Range	Std: +13 to 0 dBm 181 opt: +13 to -150 dBm		Std: +10 to 0 dBm 182 opt: +10 to -136 dBm		Std: +10 to 0 dBm 183 opt: +10 to -136 dBm		
Level Accuracy	Std: ±1.0 dB 181 opt: ±1.5 dB		Std: ±2.5 dB 182 opt: ±3 dB, +10 to -50 dBm ±3.5 dB, -50 to -136 dBm		Std: ±2.5 dB 183 opt: ±3 dB, +10 to -50 dBm ±3.5 dB, -50 to -136 dBm		
Leveling	Std: ±0.5 dB, f > 1 MHz ±1 dB, f < 1 MHz 181 opt: ±1.0 dB, f > 1 MHz ±1.5 dB, f < 1 MHz		Std: ±2.0 dB 182 opt: ±2.5 dB		Std: ±2.0 dB 183 opt: ±2.5 dB		
Programming Resolution	Std: N/A 181 opt: 0.5 dB		Std: N/A 182 opt: 0.5 dB		Std: N/A 183 opt: 0.5 dB		
Impedance	50Ω		50Ω		50Ω		
VSWR	Std: < 2.6 181 opt: < 2.6 above 0 dBm < 1.4 below 0 dBm		Std: < 2.6 182 opt: < 2.6 above -6 dBm < 1.4 below -6 dBm		Std: < 2.6 183 opt: < 2.6 above -6 dBm < 1.4 below -6 dBm		

TABLE 1-2. SYSTEM SPECIFICATIONS (Cont)

OUTPUT CHARACTERISTICS (Cont)				
Output Level Maximum Switching Time (180 series options only) (1)	Programming Mode	μ P Time	Settling Time	Total Switching Time
	BCD Parallel	0	10ms	10ms
	GPiB (005 Option)	20ms	10ms	30ms
(1) <1ms on same attenuator range.				
AMPLITUDE MODULATION				
PM3601 or PM3602 (M Suffix) Modulators	360, 360M .01-180 MHz	361, 361M 1-1800 MHz	362, 362M 1-2000 MHz (.01-2000 MHz, 012 Opt)(5)	
Modulation Depth	0 - 95% ⁽¹⁾		0 - 90% ⁽²⁾	
Indicated AM Accuracy at 400 & 1000 Hz Rates (M-suffix only)	$\pm 5\%$ of Full Scale (100%)		$\pm 5\%$ of Full Scale (100%)	
AM Distortion, THD 400 and 1000 Hz Rates 30% AM 90% AM	1.0% 3.0% ⁽¹⁾		1% ⁽³⁾ 5% ⁽³⁾	
AM 3dB Bandwidth 0 - 70%	DC-200 Hz, CF<0.4 MHz DC-10 KHz, 0.4 $\leq$ CF<4 MHz DC-100 KHz, CF>4 MHz		DC-10 KHz, 2 MHz<CF<10 MHz ⁽⁴⁾ DC-80 KHz, CF $\geq$ 10 MHz ⁽⁴⁾	
0 - 90%	DC-100 Hz, CF<0.4 MHz DC-5 KHz, 0.4<CF<4 MHz DC-50 KHz, CF $\geq$ 4 MHz		DC-5 KHz, 2 MHz<CF<10 MHz ⁽²⁾ DC-50 KHz, CF $\geq$ 10 MHz ⁽²⁾	
Internal Oscillator (M-suffix only)	400 and 1000 Hz			
Remote Programming (M-suffix only)	Fully programmable, external modulation input level is 1.0 VRMS for full scale.			
Programming Resolution (M-suffix only)	0.5% Increments			

(1) For output levels below +9 dBm. With 181 ATTENUATOR OPTION for levels below +7 dBm.

(2) For output levels below +7 dBm. With 182/183 ATTENUATOR OPTIONS, for levels below +3 dBm.

(3) For output levels between 0 and +7 dBm. With 182/183 OPTIONS, for level settings between -4 and +3 dBm.

(4) For output levels between +2 and +7 dBm. With 182/183 OPTIONS, for levels between 0 and +5 dBm.

(5) AM capability below 1 MHz (012 option) is limited.

TABLE 1-2. SYSTEM SPECIFICATIONS (Cont)

FREQUENCY MODULATION			
PM3602 Modulation Section	360M .01-180 MHz	361M 1-1800 MHz	362M 1-2000 MHz(1)
Rate	20 Hz to 300 KHz		
FM Center Frequency Long Term Stability	Same as in CW Mode		
Maximum Peak Deviation	1 MHz	1 MHz, CF < 320 MHz 10 MHz, CF ≥ 320 MHz	1 MHz, CF < 400 MHz 10 MHz, CF ≥ 400 MHz
Incidental AM	< -70 dB with 75 KHz peak deviation at a 1 KHz rate		
FM Distortion (Internal Oscillator)	< 2% up to 100 KHz dev.	< 2% up to 100 KHz dev.for CF < 320 MHz < 2% up to 1 MHz dev. for CF ≥ 320 MHz	< 2% up to 100 KHz dev.for CF < 400 MHz < 2% up to 1 MHz dev. for CF ≥ 400 MHz
Internal Oscillator	400 and 1000 Hz		
Full Scale Ranges	0 - 10 KHz, 0 - 100 KHz, 0 - 1 MHz, 0 - 10 MHz		
Indicated FM Accuracy (up to 20 KHz rates)	±5% of Full Scale Range		
Remote Programming	Modes, range and level. External modulation input level is 1.0 VRMS for full scale.		
Programming Resolution	0.5% of Selected Range		
(1) 012 Option, .01-2000 MHz.			
PHASE MODULATION			
PM3602 Modulation Section	360M .01-180 MHz	361M 1-2000 MHz	362M(1) 1-2000 MHz
Rate	DC to 300 KHz		
Maximum Peak Deviation	100°, CF < 60 MHz 200°, CF ≥ 60 MHz	100°, CF < 80 MHz 200°, 80 to 160 MHz 400°, CF ≥ 160 MHz	100°, CF < 100 MHz 200°, 100 to 200 MHz 400°, CF ≥ 200 MHz
φM Distortion (Internal Oscillator)	< 5%		
Internal Oscillator	400 and 1000 Hz		
Full Scale Ranges	0 - 100°, 0 - 400°		
Indicated Accuracy	±5% of Full Scale Range		
Remote Programming	Mode, range and level. External modulation input level is 1.0 VRMS for full scale.		
Programming Resolution	0.5% of Selected Range		

(1) 012 Option, .01-2000 MHz

TABLE 1-2. SYSTEM SPECIFICATIONS (Cont)

PULSE MODULATION			
PM3601 or PM3602	360,360M .01-180 MHz	361,361M 1-1800 MHz	362,362M 1-2000 MHz(1)
Rise/Fall Time	< 5μs		
On/Off Ratio	> 70 dB	> 30 dB	
Input Level Required	0 to +5V under remote control 0 to -5V under modulator panel control		
REMOTE PROGRAMMING			
	360,360M .01-180 MHz	361,361M 1-1800 MHz	362,362M 1-2000 MHz(1)
Interface: IEEE Standard 488 or Option 005 parallel TTL (BCD for Frequency and Level). Functions Controlled: All functions except the line switch are controlled and are programmable. Output level is programmable only with 180 series attenuator options. Modulation is programmable only with M suffix models (Includes PM 3602 modulator). Mating Connector Types: (Not Supplied) Fast Switching Parallel TTL: Frequency: Amp Champ P/N 229974-1 (AILTECH P/N 293073-001) Modulation and Level: Amp Champ (P/N 552444-1 (AILTECH P/N 293074-001)			

(1) .01-2000 MHz with 012 Option.

1-4. DESCRIPTION

1-5. MAINFRAME

1-6. The AILTECH Type 360D11 Mainframe, shown in the frontispiece, accepts the 3600E1 Frequency Extender and/or various RF sections to provide synthesized signals. The basic unit measures 7-inches high, 16-3/4 inches wide, 22-3/8 inches deep, and weighs 48 pounds. It produces frequencies in the range of 35 to 35.9999999 MHz in steps of 1 Hz or in steps of 0.1 Hz when the -001 option is provided. Specifications for the 360D11 mainframe are listed in Table 1-3.

1-7. All mainframe frequencies are derived from a reference input. The reference can be an externally applied 5 or 10 MHz signal, or from an optional, internal, 10-MHz crystal-controlled, oven-stabilized signal source. Two internal options (-002 and -003) are available. (Refer to paragraph 1-14.)

1-8. Frequency control of mainframe and frequency extender, and subsequently, the overall synthesizer output frequency, is either by reversible push-type thumbswitches on the mainframe front panel or via a remote control input on the RF section. (See RF section instruction manual for details on remote control requirements.) The only other operator controls are the LINE ON-STDBY and LOCAL-REMOTE toggle switches.

1-9. FREQUENCY EXTENDER

1-10. The 3600E1 Frequency Extender consists of five modules installed in the lower deck of the mainframe. The unit extends the 35- to 36-MHz output of the mainframe to a 10-MHz increment covering 30 to 40 MHz. The 1-MHz frequency increments are added in the process.

1-11. The frequency extender occupies the entire lower deck of the mainframe and adds 15 pounds to the mainframe weight. There are no operator controls or external connections on the frequency extender.

1-12. The frequency extender must be installed in a 360D11 Mainframe when the part number of the RF section in use includes the letter "E" or "T" in the last three digits. It can be left in place at the user's option when other P360 RF sections are used.

1-13. The frequency extender and its location in relation to the mainframe is illustrated in Figure 1-1. Specifications are listed in Table 1-4.

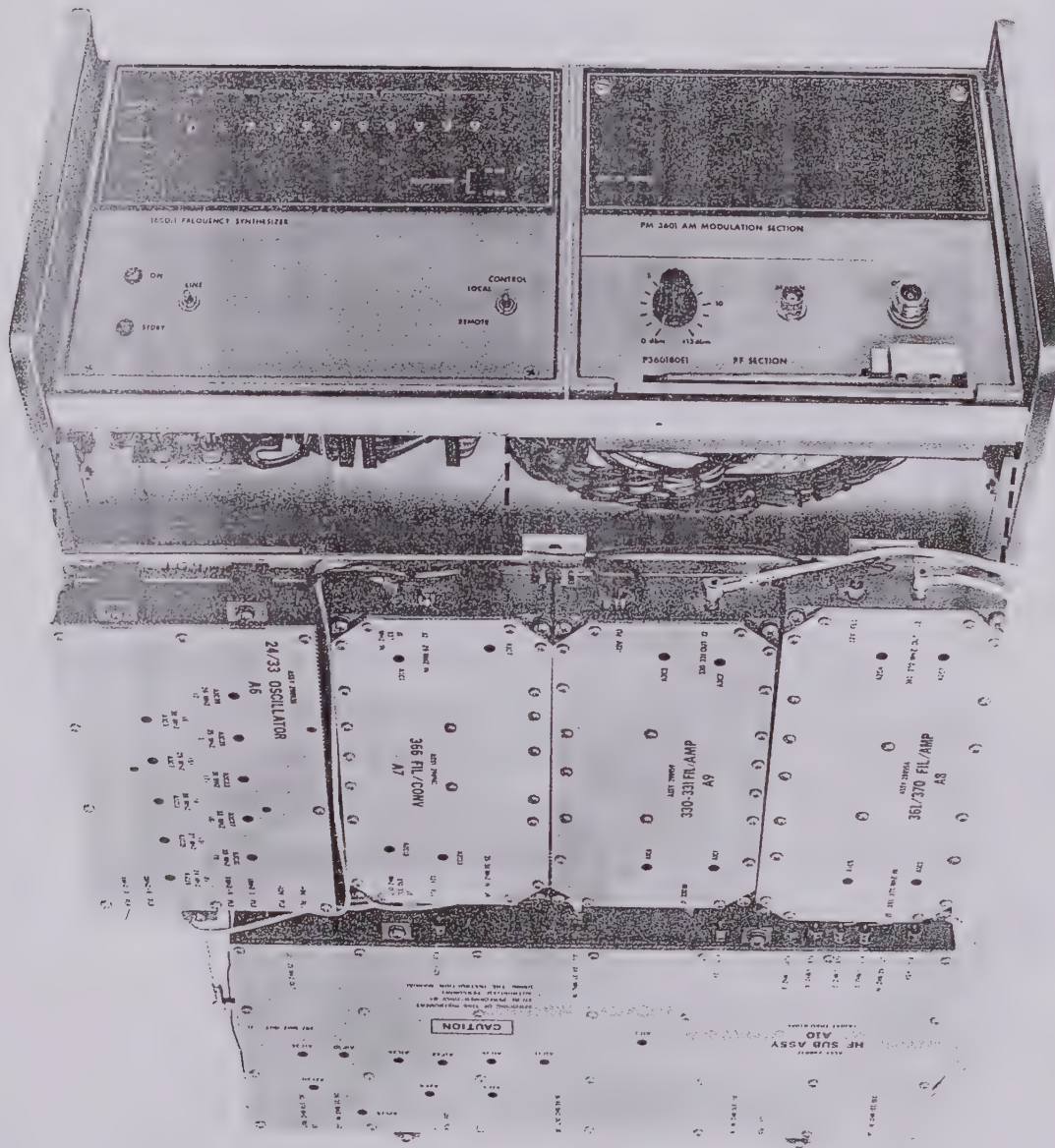


Figure 1-1. Frequency Extender Installed in Mainframe

TABLE 1-3. MAINFRAME SPECIFICATIONS

Parameter	Specification
Frequency Selection	Eleven digits selected by pushbutton or remotely programmable via RF section rear panel connector.
Frequency Resolution	Standard is 1 Hz; Optional is 0.1 Hz.
Reference Oscillator	Internal: See options External: 5 or 10 MHz, 0 to +5 dBm, 50 ohms, BNC rear panel input.
Reference Output	Rear panel BNC connector provides 10 MHz reference output at +3 dBm nominal, 50 ohms.
Display	Frequency selection pushbuttons provide mechanical display of frequency.
Operating Temperature Range	0 to 55°C.
Power	115 or 230 volts, $\pm 10\%$, 48 to 66 Hz (50 - 400 Hz, option 004), approximately 130 watts including typical RF Section, frequency extender, and modulation section.
Size	16-3/4 inches wide x 7 inches high x 22-3/8 inches deep (426 x 178 x 568 mm).
Weight	Mainframe only Net: 48 lbs (21.6 kg) Shipped: 60 lbs (27.3 kg)

TABLE 1-4. FREQUENCY EXTENDER SPECIFICATIONS

Parameter	Specification
Size	Module to fit the 360D11 Mainframe
Weight	Frequency Extender only Net 15 lbs (6, 8 kg) Shipped 18 lbs (8, 2 kg)

1-14. OPTIONS

1-15. Eight options are available with the frequency synthesizer: 001 through 005 and 012 are described below. 006 and 007 are described in paragraphs 2-16 to 2-18.

- Option 001 adds one additional decade to the mainframe, improving the basic mainframe/frequency extender resolution to 0.1 Hz. Actual output resolution of the complete synthesizer is dependent upon the RF section installed.
- Option 002 provides an internal 10-MHz reference signal, crystal-controlled and oven-stabilized with an aging rate of $\pm 3 \times 10^{-8}/24$ hr (after 72 hours warm-up).
- Option 003 provides an internal 10-MHz reference signal, crystal-controlled and oven-stabilized with an aging rate of $\pm 1 \times 10^{-9}/24$ hr (after 72 hours warm-up).
- Option 004 provides for operation from a 50- to 400-Hz ac line frequency.
- Option 005 provides remote operation via GPIB according to IEEE Standard 488-1975.
- Option 012 provides 10kHz to 2GHz operation for P3602.0E1 RF section.

1-16. ACCESSORIES

1-17. A Service Kit (P/N 299252-001) (Figure 1-2) is available for maintenance purposes. Table 1-5 lists the items contained in the kit. The items marked with an asterisk are applicable to the mainframe/frequency extender combination.

1-18. TEST EQUIPMENT

1-19. Table 1-6 lists the test equipment recommended for use in testing, adjusting, and servicing the mainframe and frequency extender.

1-20. MAINFRAME SUBASSEMBLIES

1-21. The mainframe consists of eight major assemblies. Table 1-7 lists the name, reference designation, and part number of each assembly.

1-22. FREQUENCY EXTENDER SUBASSEMBLIES

1-23. The frequency extender consists of five major assemblies. Table 1-8 lists the name, reference designation, and part number of each assembly.

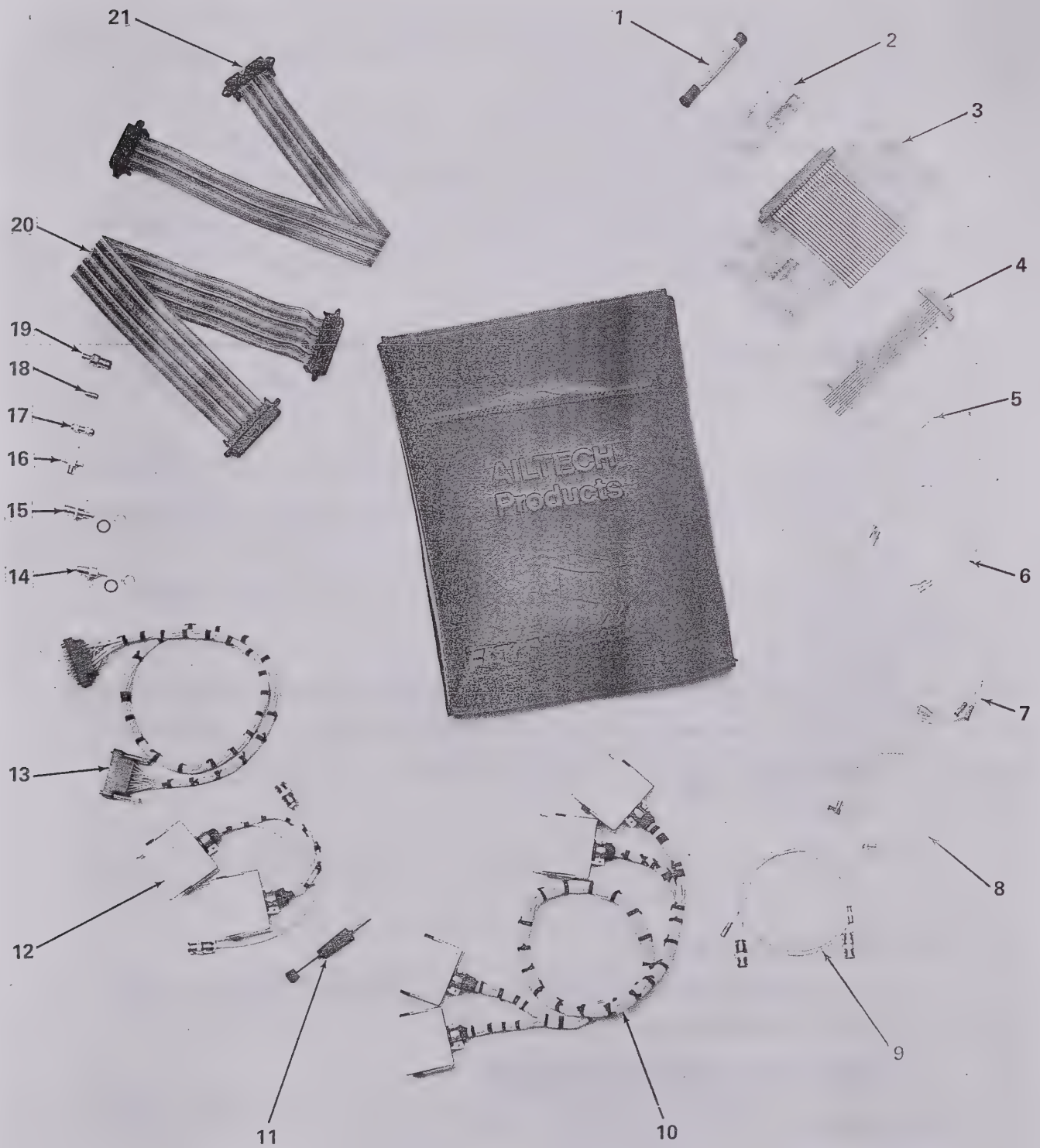


Figure 1-2. Service Kit

TABLE 1-5. SERVICE KIT ITEMS P/N 299252-001

Figure 1-2 Item No.	Qty	Part No.	Description
1*	1	293198-001	Tuning Tool
2*	1	299225-001	PWB, Jumper, L.O. BCD
3*	1	299545-001	PWB Assy, BCD Extender
4*	1	299547-001	PWB Assy, PWR Supply Extender
5*	1	293198-002	Tuning Tool
6*	2	299543-001	Cable Assy, SMB Plug/SMB Jack
7*	2	299543-002	Cable Assy, SMB Plug/SMB Plug
8*	1	299543-003	Cable Assy, SMB RT $\times$ Plug/SMB RT $\times$ Plug
9*	1	299543-004	Cable Assy, SMB Plug/BNC Plug
10	1	299822-001	Cable Assy, Plug In Extender
11	1	294291-001	M Block Extraction Tool
12*	1	299821-001	Cable Assy, Mainframe Jumper
13	1	299820-001	Cable Assy, Modulation Extender
14*	1	294677-002	Adapter, BNC Jack/SMB Jack
15*	1	294676-002	Adapter, BNC Jack/SMB Plug
16*	1	294678-001	Adapter, SMB Tee
17	1	294653-001	Adapter, SMA Plug/Plug
18	1	294652-001	Adapter, SMA Jack/Jack
19	1	294658-001	Adapter, BNC Jack/SMA Jack
20	1	296551-001	Cable Assy, 50 Position
21	1	296551-002	Cable Assy, 36 Position

* Specifically required for mainframe/frequency extender maintenance.

TABLE 1-6. RECOMMENDED TEST EQUIPMENT

Item	Specification	Recommended Model
Spectrum Analyzer	0.001 to 22 GHz, 100 dB display range with preselection and variable persistence	AILTECH 757A
Frequency Counter	300 Hz to 180 MHz	Dana 7720
RF Power Meter	200 kHz to 200 MHz, ± 0.2 dB	Boonton 42B
Prescaler	600 MHz, $\div 10$, $\div 100$	Weston 1259
Service Kit	See Table 1-5 and Figure 1-2	AILTECH 299252-001

TABLE 1-7. MAINFRAME ASSEMBLIES AND SUBASSEMBLIES

Reference Designation	Title	Part Number
1A1	Front Panel Assembly	296779-001
1A1A1	Frequency Selector Switch Motherboard	299202-004
1A2	Lower Order BCD Assembly	298933-002
1A2A1	1 kHz BCD Decade PC Board	299204-001
1A2A2-1A2A4	10 Hz to 100 Hz BCD Decade PC Boards	299214-001
1A2A5	0.1 Hz BCD Decade PC Board	299214-001(1)
1A2A6	BCD Interconnecting PC Board	299203-001
1A2A5	Jumper PC Board	299225-001(2)
1A2A7	BCD Distribution PC Board	299220-001
1A2A8	BCD Distribution PC Board	299220-001
1A4	Higher Order BCD Assembly	298934-001
1A4A1	100 kHz BCD-1 PC Board	298904-001
1A4A2	100 kHz BCD-2 PC Board	298905-001
1A4A3	100 kHz BCD-4 PC Board	298906-001
1A4A4	100 kHz BCD-8/1 PC Board	298907-001
1A4A5	100 kHz BCD-8/2 PC Board	298908-001
1A4A6	Buffer Amplifier PC Board	298909-001
1A4A7-A10	64/65 MHz Switch PC Board	298910-001
1A4A11	10 kHz BCD PC Board	299248-001
1A5	Fixed Frequency Generator Assembly	298935-001
1A5A1	Input PC Board	298921-001
1A5A2	10 MHz Output PC Board	298918-001
1A5A3	60 MHz Generator PC Board	298919-001
1A5A4	65 MHz Generator PC Board	298917-002
1A5A5	64 MHz Generator PC Board	298915-001
1A5A6	35/35.5 MHz Generator PC Board	298926-001
1A11	Power Supply Assembly	-
1A11A1	Filter PC Board	298997-001
1A11A2	+5.2 Volt Regulator PC Board	298998-001
1A11A3	-12 Volt Regulator PC Board	299200-001
1A11A4	Power Supply Motherboard	298928-001
1A12	Rear Panel Assembly	298932-001
1A13	Frequency Standard	298648-001(3)
1A14	Logic/Power Distribution PC Board	299201-001

Notes: (1) Option 001 only

(2) Delete for Option 001

(3) Option 002 298648-003
Option 003 298648-002

TABLE 1-8. FREQUENCY EXTENDER ASSEMBLIES AND SUBASSEMBLIES

Reference Designation	Title	Part Number
1A6	24/33 MHz Oscillator Assembly	298938-001
1A6A1	24/33 MHz Oscillator PC Board	298949-001
1A6A2	Isolator/Divider PC Board	298952-001
1A6A3	Isolator/Amplifier PC Board	298953-001
1A7	366 MHz Filter/Converter Assembly	298961-001
1A7A1	366 MHz Filter/Converter Input PC Board	298962-001
1A7A2	366 MHz Filter/Converter Output PC Board	298963-001
1A8	361/370 MHz Filter Amplifier Assembly	298954-001
1A8A1	361/370 MHz Filter Amplifier Input PC Board	298955-001
1A8A2	361/370 MHz Filter Amplifier Output PC Board	298956-001
1A9	330/331 MHz Filter Amplifier Assembly	298959-001
1A9A1	330/331 MHz Filter Amplifier Input PC Board	298965-001
1A9A2	330/331 MHz Filter Amplifier Output PC Board	298966-001
1A10	High Frequency Subassembly	298937-001
1A10A1	337 MHz Oscillator Isolator PC Board	298995-001
1A10A2	337 MHz Isolator PC Board	298996-001
1A10A3	30/40 MHz Filter Amplifier PC Board	298901-001
1A10A4	330.5 MHz Power Amplifier PC Board	298902-001
1A10A5	1-5 MHz Comb Generator PC Board	298900-001
1A10A6	29 MHz Filter Converter PC Board	298903-001

CHAPTER 2

INSTALLATION

2-1. INTRODUCTION

2-2. This chapter describes unpacking, preparation for use, and initial checkout of the 360D11 Frequency Synthesizer with and without the 3600E1 Frequency Extender.

2-3. UNPACKING

2-4. No special instructions or precautions are necessary for unpacking the equipment except that reasonable care should be exercised to protect the RF section mating connectors from damage.

2-5. PREPARATION FOR USE

2-6. If a complete synthesizer was ordered, all components have been assembled at the factory and all connections made prior to shipment. Paragraphs 2-7 through 2-15 describe installation procedures if various components are ordered separately.

2-7. FREQUENCY EXTENDER INSTALLATION

2-8. If the mainframe contains a frequency extender, all connections have been made at the factory. If a frequency extender is being added to a mainframe, refer to Figure 2-1 and proceed as follows. (This procedure requires a 5/16-inch spintight.)

- a. Disconnect the ac line cord and turn the frequency synthesizer upside down.
- b. Remove the bottom cover.
- c. Disconnect two cables W23A10J5 and W10A7J4 from each other and remove the interconnecting adapter.
- d. Install frequency extender and secure in place with eight nuts.
- e. Make the following connections to the frequency extender:

<u>Cable</u>	<u>Frequency Extender Connection</u>
W18A7J2	A7J2
W24A10J10	A10J10
W23A10J5	A10J5
W14A10J7	A10J7
W10A7J4	A7J4

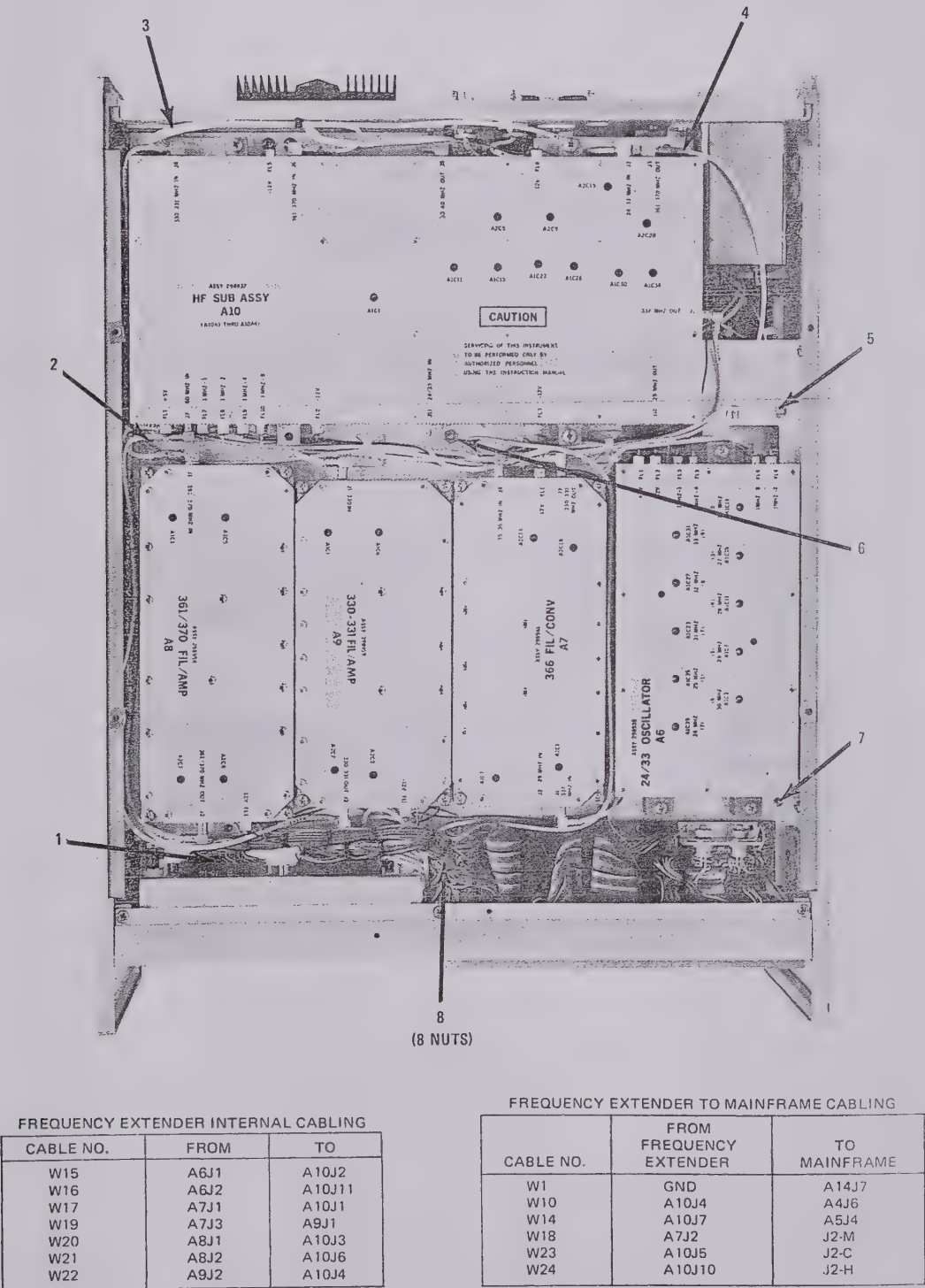


Figure 2-1. Frequency Extender Installation

- f. Replace the bottom cover.
- g. Turn frequency synthesizer right side up.

2-9. FREQUENCY STANDARD INSTALLATION

2-10. If the optional internal frequency standard (mainframe option -002 or -003) is ordered separately, it is installed as follows. (This procedure requires a phillips head screwdriver and a soldering iron.)

- a. Disconnect ac line cord.
- b. Remove cover plate above the frequency standard at right rear corner of mainframe.
- c. Secure new cover plate to oven with three phillips head screws provided. (The long screw goes in the top center location.) Make certain the frequency adjustment screw is accessible through the adjustment hole.
- d. Withdraw coiled cable and leads from inside mainframe.
- e. Connect coaxial cable to SMA output connector of frequency standard.
- f. Solder purple-white striped wire to feedthrough filter capacitor.
- g. Solder black wire to ground lug under feedthrough filter capacitor.
- h. Slip screw heads on top surface of oven through slots in bracket at top of well.
- i. Slide the unit into mainframe until cover plate bottoms against rear panel. Secure with screws provided.
- j. Connect BNC jumper cable between rear panel connectors marked, 10 MHz INT STD OUT and 5/10 MHz REF IN.

2-11. MODULATION SECTION INSTALLATION

2-12. If the RF section was ordered and shipped with a modulation section, the two units have been assembled at the factory prior to shipment. From an external viewpoint, the modulation section makes up the upper half of the RF section front panel. If this unit is in place, proceed directly to paragraph 2-14.

2-13. The modulation section is best installed with the RF section either completely removed from or partially inserted in the mainframe. (No tools are required for the following procedures.)

- a. Insert modulation interface connector P3 through front panel opening and seat the connector in mating block J3 on RF section. Secure connector by finger-tightening the captive thumbscrews on P3.

- b. Place lower edge of modulation section panel on upper edge of RF section panel. Make certain the metal tab on modulation section panel is behind the RF section panel.
- c. Pivot panel back into recess provided. Secure unit by finger-tightening captive thumbscrews on modulation section front panel.
- d. On PM3602 it is also necessary to secure rear support bracket to the RF section with a number six screw, nut, and lockwasher.

2-14. RF SECTION

2-15. Install the RF section by performing the following procedure:

CAUTION

Do not attempt to assemble the RF section to a mainframe if the connector alignment pins are bent, since this could cause extensive damage to the plug-in connectors.

- a. Carefully slide unit about halfway into slot provided on right side of mainframe.
- b. Make certain that the locking lever is at about a 45 degree angle with the front panel and fully seat the unit. The locking lever should pivot in towards panel.
- c. Lock plug-in by depressing lever until latch engages.

2-16. RACK MOUNTING

2-17. A rack mounting adapter kit (006 Option) is required to secure the AILTECH 360 Frequency Synthesizer in a standard 19-inch rack. The kit consists of two right-angle brackets which bolt to the side of the unit. (See Figure 2-2.) Complete assembly instructions are provided with the kit.

CAUTION

A fully assembled AILTECH 360 Frequency Synthesizer can weigh as much as 85 lbs. Two persons are required to lift the unit, and it must be supported in a rack by some means other than the rack mounting kit. Full length shelf brackets or suitable rack-mount chassis slides (paragraph 2-18) are recommended for support in a rack.

2-18. Rack mount slide adapter kit (-007 Option) provides a suitable means for mounting the AILTECH 360 Frequency Synthesizer in a rack with chassis slides. (Slides are not

provided with the kit.) The kit consists of two replacement side panels for the mainframe and instructions illustrating a typical rack mounting installation. The panels are designed to mate with the Jonathan Manufacturing Company 310 series slide.

2-19. INITIAL TURN-ON

2-20. The location and function of the controls, indicators, and connectors on the mainframe are described in Chapter 3. Other controls, indicators, and connectors referenced in the following procedures are located on and described in the appropriate RF section instruction manual.

CAUTION

To prevent damage to the instrument, make line voltage selection before connecting line power. Also ensure that the line power cord is connected to a power circuit with a protective earth ground.

- a. Set power switch at rear of frequency synthesizer to 115 or 230 volts depending on power source being used.
- b. Set LINE switch on frequency synthesizer front panel to STDBY.
- c. Set CONTROL switch to LOCAL.
- d. Connect power cable at rear of frequency synthesizer to an uninterrupted source of 115/230-Vac, single-phase, 48- to 66-Hz power (50 to 400 Hz with Option -004). The STDBY light on front panel should go on.
- e. If the frequency synthesizer contains Option -002 or -003 (internal frequency standard), allow the unit to warm-up for a minimum of 1 hour. (Refer to paragraph 3-5.)

2-21. INITIAL CHECKOUT

2-22. After an initial warmup period of 1 hour, check that the frequency synthesizer is operating properly as follows:

- a. If the unit is not equipped with an optional, internal frequency standard (Option -002 or -003), connect a stable 5- or 10-MHz signal at 0 dBm to the rear panel BNC connector marked 5/10 MHZ REF IN.
- b. Connect frequency counter to OUTPUT connector on front panel of RF section.
- c. Connect REF OUTPUT at rear of synthesizer mainframe to external standard input of counter.

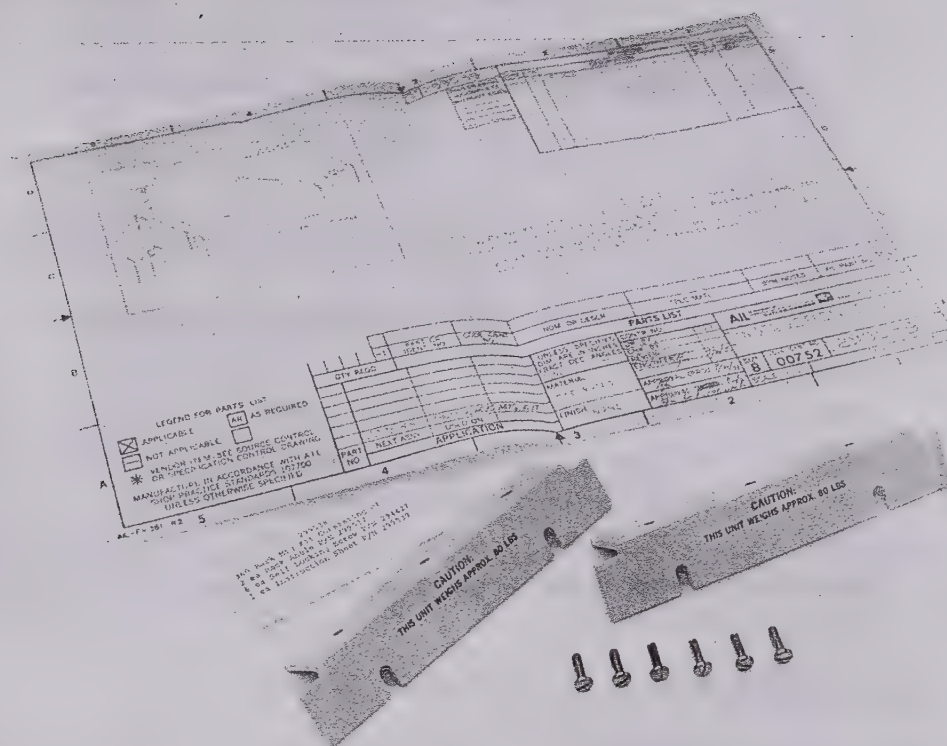


Figure 2-2. Rack Mounting Adapter Kit (Option 006)

- d. Set frequency selection switches on frequency synthesizer front panel to any arbitrary frequency within range of RF section installed.
- e. Set LINE switch to ON and check that frequency counter indicates selected frequency (± 1 count).
- f. Refer to the instruction manual for the RF section in use for power output and flatness checks.

CHAPTER 3

OPERATION

3-1. INTRODUCTION

3-2. This chapter illustrates and describes the controls, indicators, and connectors of the AILTECH 360D11 Frequency Synthesizer Mainframe. It also provides operating instructions and a simple operating check which may be performed should the unit appear to malfunction.

3-3. CONTROLS, INDICATORS, AND CONNECTORS

3-4. Figure 3-1 shows the controls, indicators, and connectors on the front and rear panels of the frequency synthesizer mainframe. Table 3-1 lists the exact name of the control, reference designation, and function.

3-5. REFERENCE OSCILLATOR STABILIZATION

3-6. The AILTECH 360D11 Frequency Synthesizer Mainframe and 3600E1 Frequency Extender are used in conjunction with an appropriate P360 RF Section as a precision signal source. The frequency accuracy and precision is dependent upon an externally applied 5- or 10-MHz reference signal, or an optional, internal, oven-stabilized, 10-MHz crystal controlled oscillator. A minimum period of one hour is required for the oven to reach full operating temperature. The specified stability is obtained after the oscillator is on for a minimum of 72 hours. For this reason, the frequency synthesizer is provided with an ON/STDBY (standby) switch rather than a power on-off switch. It is suggested that the unit be connected to an uninterrupted source of ac power and remain in the standby mode when not being used. In this manner, the 10-MHz crystal oscillator is maintained at a constant temperature, and the frequency synthesizer is ready for immediate use without a long warmup period.

3-7. Before attempting to operate the synthesizer using the internal reference oscillator, make certain the BNC jumper cable between the INT STD OUT and the REF IN jacks at the rear of the mainframe is in place.

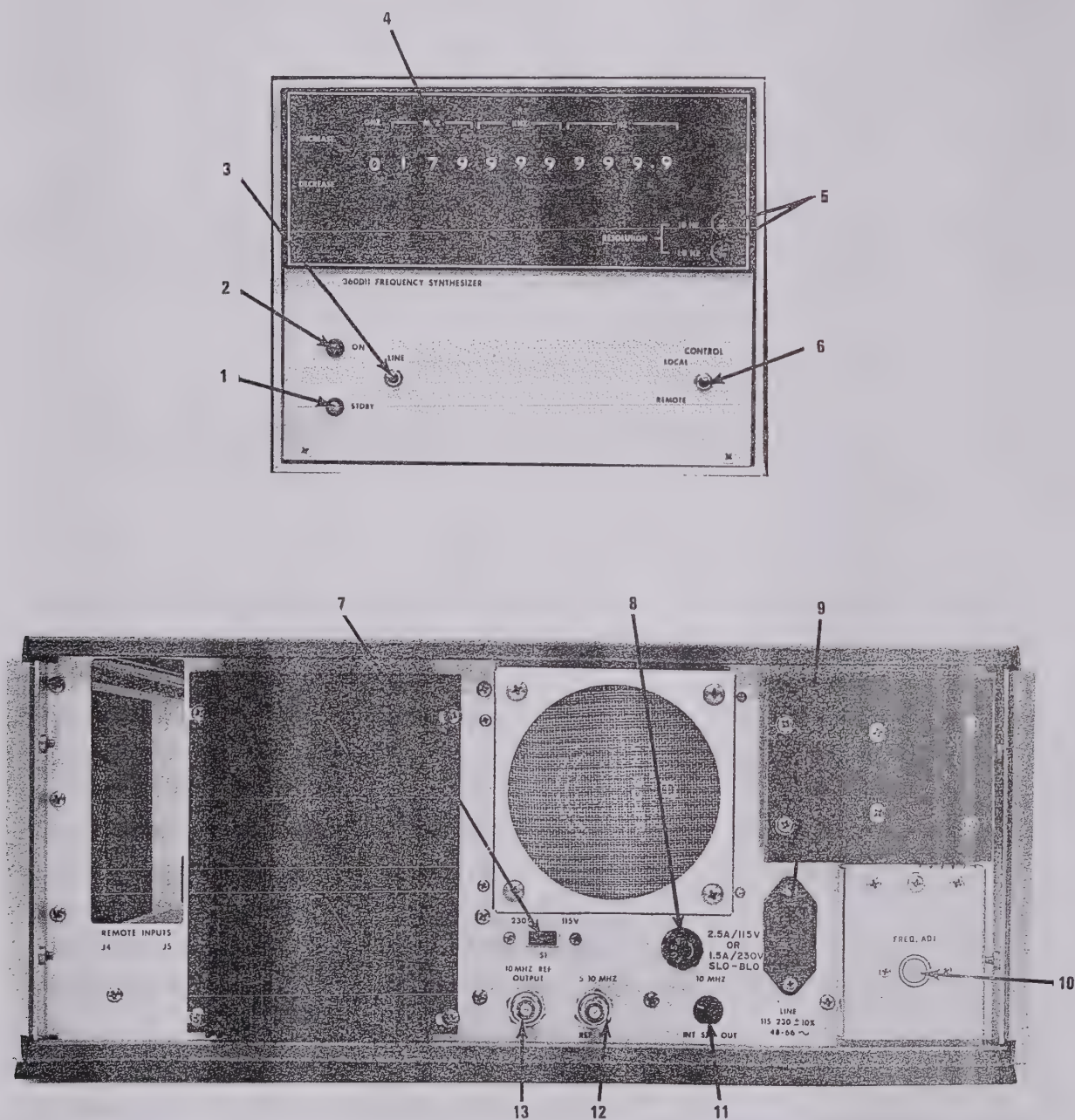


Figure 3-1. Frequency Synthesizer Mainframe, Controls and Indicators

TABLE 3-1
MAINFRAME CONTROLS, INDICATORS, AND CONNECTORS

Key	Name	Reference Designation	Function
1	STDBY indicator	1A1CR2	Yellow LED indicates line cord connected to a source of ac power. Internal reference oscillator and oven is energized.
2	ON indicator	1A1CR1	Green LED indicates power is applied to entire synthesizer.
3	LINE switch	1A1S1	Toggle switch selects ON or STDBY condition.
4	INCREASE-DECREASE switches	1A1A1S1	Reversible thumbswitches set output frequency by decades.
5	10 HZ - 1.0 HZ RESOLUTION indicators	1A1CR3, 1A1CR4	Two green LED's indicate minimum synthesized increment available.
6	LOCAL-REMOTE CONTROL switch	1A1S2	Toggle switch selects front panel control (LOCAL) or rear panel inputs (REMOTE).
7	230V-115V switch	1A12S1	Slide switch sets unit for operation from 230 or 115 volts rms line voltage.
8	Line fuse	1A12F1	Line fuse. 2.5 amps slo-blo for 115 volts rms line, or 1.5 amps slo-blo for 230 volts rms line.
9	LINE connector		Ac line input connector. 115/230V $\pm 10\%$ 48-66 Hz (48 - 420 Hz with Option -004).

TABLE 3-1
MAINFRAME CONTROLS, INDICATORS, AND CONNECTORS (cont)

Key	Name	Reference Designation	Function
10	FREQ. ADJ adjustment	1A13	± 2 parts in 10^6 frequency adjustments for optional internal frequency standard (Option -002 or -003).
11	10 MHZ INT STD OUT connector	1A12J3	BNC output connector for internal frequency standard (not used unless Option -002 or -003 is installed).
12	5/10 MHZ REF IN connector	1A12J2	BNC connector for internal or external frequency standard input to the synthesizer (5 or 10 MHz at 0 dBm).
13	10 MHZ REF OUTPUT connector	1A12J1	BNC connector provides the buffered 10-MHz reference signal output (+3 dBm nominal).

3-8. OPERATING INSTRUCTIONS

3-9. LOCAL MODE

3-10. After initial installation and warmup, the frequency synthesizer can be operated with manual control of the output frequency from the front panel as follows:

- a. Connect instruments or circuits requiring a precision frequency input to OUTPUT connector on RF section.
- b. Set mainframe CONTROL switch to LOCAL.
- c. Set desired frequency into the frequency selection switches by operating each INCREASE and DECREASE switch.
- d. Set output level vernier (and optional step attenuator if installed) to the desired power output.
- e. Set LINE switch to ON.

- f. Readjust frequency and power as required. If an invalid frequency is selected, this will be indicated by illumination of the OUT OF RANGE indicator on the RF section front panel.
- g. If the RF section is equipped with an External AM Section (PM3601), the synthesizer output may be amplitude modulated. Connect a dc to 100 kHz, 0 to 1 volt rms signal to MOD IN connector on RF section front panel. The modulation level will be proportional to the level present at the connector over a 0 to 95 percent range depending on plug-in being used. A sinewave with 0.5 volts rms amplitude will produce 50 percent modulation.
- h. Programmable amplitude, frequency, and phase modulation are available with the PM3602 Modulation Section. Refer to the instruction manual for this unit for complete operating instructions.

3-11. REMOTE MODE

3-12. The output frequency, level, and modulation of the synthesizer may be controlled by remote programming inputs at the rear of the RF section. Refer to the applicable RF section instruction manual for remote frequency control instructions. Remote level control is provided with the addition of an optional attenuator. Remote modulation (AM, FM, and ϕ M) control is provided with the PM3602 Programmable Modulation Section. Programming instructions are provided in the manuals applicable to these functions.

3-13. To operate in the remote mode, proceed as follows:

- a. Connect a source of programming information to the appropriate connectors on the RF section rear panel.
- b. Set LOCAL-REMOTE switch to REMOTE.

3-14. OPERATORS MAINTENANCE.

3-15. If the frequency synthesizer appears to malfunction, perform the following checks:

- a. If both the STDBY and ON indicators are inoperative (no ac power), check that the primary power source is turned on.
- b. Check that the power cable is securely connected to the unit.
- c. Check fuse at rear of unit and replace blown fuse. If the fuse constantly blows, the unit requires more extensive repair. (See Chapter 4.)

- d. If ac line power is applied but no output is available, check that the RF section is properly seated and locked in place.
- e. Make certain the selected frequency is within the range of the RF section (OUT OF RANGE light is out).
- f. Check that an appropriate internal or external reference source is connected to the mainframe REF IN connector.
- g. Check that the output cable being used is not damaged or incorrectly connected. If an output is still not available, the unit requires more extensive repair. (See Chapter 4.)

CHAPTER 4

MAINTENANCE

4-1. INTRODUCTION

4-2. This chapter contains maintenance information for the Type 360D11 Frequency Synthesizer and the Type 3600E1 Frequency Extender. The maintenance philosophy used provides defined troubleshooting procedures to isolate a malfunction to a card or sub-assembly, then provides sufficient test data on each card or subassembly to allow a technician to further troubleshoot to a faulty component. To achieve these goals, this chapter contains the principles of operation of the frequency synthesizer and frequency extender to familiarize the technician with the operation of the units; a troubleshooting chart to isolate a malfunction to a card or subassembly; complete photographs of the units so that the technician can identify a faulty card or subassembly; principles of operation of each card and subassembly along with schematic diagrams, critical test data, service block diagrams, and parts location diagrams to enable the technician to isolate a malfunction to a particular component. In addition, this chapter contains several critical performance tests and adjustments to enable the technician to maintain the frequency synthesizer and frequency extender in optimum operating condition.

4-3. PRINCIPLES OF OPERATION

4-4. FREQUENCY SYNTHESIZER MAINFRAME (See Figure 4-1.)

4-5. The 360D11 Frequency Synthesizer Mainframe produces an output between 35 and 36 MHz selectable in 1.0-Hz increments (0.1 Hz with option -001). The basis for the extremely high accuracy of the Type 360D11 Frequency Synthesizer is 10-MHz standard oscillator A13 (-002 or -003 option). This oscillator is a highly stable, crystal-controlled oscillator in a proportionally controlled oven. If the -002 or -003 option is not included, an external 5-MHz or 10-MHz reference source may be used. The accuracy of the frequency synthesizer depends on the accuracy of the reference source used.

4-6. The reference output is applied to fixed frequency generator input board A5A1, where the 10-MHz signal is amplified and filtered before being distributed to various circuits in the mainframe. If a 5-MHz input is used, A5A1 acts as a frequency doubler producing the

10-MHz required by the rest of the unit. The output of A5A1 is applied to all the other printed circuit boards in A5 (A5A2-A5A6). In A5A2, the 10-MHz signal is supplied to two amplifier and filter channels to provide two 10-MHz outputs. One output is applied to the RF plug-in section being used. The second output is supplied to an output connector at the rear of the frequency synthesizer to serve as a highly accurate 10-MHz reference signal. Board A5A3 is a 60-MHz generator. In A5A3, the 10-MHz signal is multiplied by 6, filtered, and the resultant 60-MHz output is supplied to 1 to 5 MHz comb generator A10A5 in the frequency extender.

4-7. The 65-MHz generator (A5A4) and 64-MHz generator (A5A5) generate the two comb line frequencies used in the mainframe. The 65-MHz generator multiplies the 10-MHz input by 13 and divides by 2 to produce the 65-MHz output. The 64-MHz generator multiplies the 10-MHz input by 8, divides the result by 5, and multiplies the 16-MHz result by 4 to produce the 64-MHz output. The 64- and 65-MHz output of A5A4 and A5A5, respectively, are both applied through A4 to all BCD sections.

4-8. The 10-MHz also is applied to 35/35.5 MHz board A5A6. In A5A6, the 10-MHz signal is multiplied by 7 and divided by 2, and the resultant 35-MHz signal is applied to the board output as well as to a divide-by-10 circuit within the board. The 64-MHz input to A5A6 (from A5A5) is mixed with the second harmonic of the divide-by-10 circuit (7 MHz) and band-pass filtered to produce a 71-MHz signal. This signal is divided by 2 to produce the 35.5-MHz output signal. A logic circuit on the card, which is controlled by the plug-in logic, determines whether the 35-MHz or 35.5-MHz signal will be available at the A5A6 output. This output provides the starting frequency for the BCD synthesis section.

4-9. The 35/35.5 MHz output of A5A6 is applied to lower order BCD board A2A5. With the -001 option, the A2A5 board produces the tenths of a Hertz output. When this option is not used, the A2A5 board (P/N 299214) is replaced by a jumper board (P/N 299255) and the tenths of a Hertz digit is not produced. The 35/35.5 MHz is applied through the jumper board to A2A4. The jumper board also transfers control of the 35/35.5 MHz logic to the 0.1 Hz logic line instead of the 0.05 Hz logic as it would be controlled with option -001. The 64 and 65 MHz comb line frequencies are also applied to the lower order BCD boards from A4A6 after being buffered on 10 kHz BCD Board A4A11. These buffered comb line frequencies are applied directly to A2A1 and are further buffered and distributed from there to A2A2, A2A3, A2A4, and A2A5.

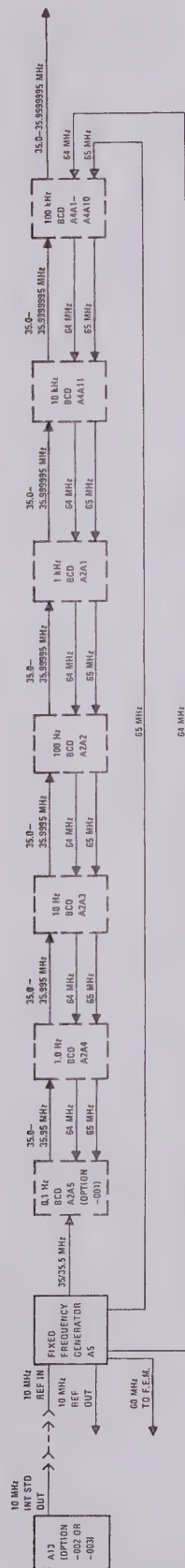


Figure 4-1. Frequency Synthesizer Mainframe, Functional Block Diagram

4-10. Selection of a frequency to be produced by the frequency synthesizer is set into the front panel thumbwheels on frequency select switch mother board A1A1. The thumbwheel information is routed to the plug-in section which contains a logic converter. The logic converter is in the plug-in section because each plug-in unit requires different logic signals depending upon the frequency range of the particular unit. The logic signals are returned to the frequency synthesizer through the plug-in module interface, J1 and J2, and are distributed by logic and power distribution board A14 to all BCD boards. Table 4-1 lists the signal name at each pin of the interface connector.

4-11. The logic signals representing the selected frequency output cause the lower order BCD boards to generate the lower order numbers. Board A2A5 generates the tenth of a Hertz digit (if -001 option is used); A2A4 generates the 1-Hz digit; A2A3 generates the 10-Hz digit, A2A2 generates the 100-Hz digit; and A2A1 generates the 1-kHz digit. Each digit is generated and added to the output of the BCD stage which feeds that particular stage thus forming a chain. (See paragraph 4-29 for a detailed description of how each BCD stage operates to produce its applicable digit). The output of A2A1 is applied to the higher order BCD assembly.

4-12. The higher order BCD assembly selects the 10-kHz and 100-kHz digits in the frequency synthesizer output. A4A11 generates the 10-kHz steps and A4A1-A4A10 produce the 100-kHz step. A4A1 through A4A4 are driven by 64/65 MHz switches A4A7 through A4A10, respectively. The BCD-8 #2 board (A4A5) functions as a final divider, filter, and amplifier for the selected frequency synthesizer mainframe output.

4-13. FREQUENCY EXTENDER (See Figure 4-2)

4-14. The purpose of the frequency extender is to add 1-MHz steps to the 35- to 36-MHz output of the frequency synthesizer mainframe, to extend the output to cover a 30- to 40-MHz output for use by certain plug-in units. The principle of drift cancellation is used to accomplish this extension.

4-15. Logic inputs to 24 to 33 MHz oscillator A6 control the frequency generated by A6. One output of A6 is applied to 29 MHz converter A10A6. The same logic which selects the A6 output also is applied to 1 to 5 MHz comb generator A10A5. This logic selects a comb line frequency between 1 and 5 MHz, which when mixed with the A6 output, results in a constant 29-MHz output from 29-MHz converter A10A6. The 1 to 5 MHz comb lines are developed from a 60-MHz input to A10A5 using a programmable counter technique. The 60-MHz input comes from 60-MHz generator A5A3 in the mainframe.

TABLE 4-1
PLUG-IN/MAINFRAME INTERFACE (PMI)
WIRE LIST

From	To	Signal Name
J1-A	A14J6-16	BCD 1 kHz-1
J1-B	A1A1J1-13	Loc 100 kHz-2
J1-C	A5J2	10 MHz (Coax)
J1-D	A1A1J1-26	Loc 100 kHz-8
J1-E	A14J6-4	BCD 1 kHz-8
J1-F	A1A1J1-12	Loc 100 kHz-4
J1-H	A14J6-18	BCD 1 kHz-2
J1-J	A1A1J1-25	Loc 100 kHz-1
J1-K	A14J6-15	BCD 1 kHz-4
J1-L	A1A1J1-11	Loc 1 MHz-4
J1-M	A14J6-1	BCD 100 Hz-2
J1-N	A1A1J1-24	Loc 1 MHz-2
J1-P	A14J6-3	BCD 100 Hz-4
J1-R	A1A1J1-10	Loc 1 MHz-8
J1-S	A14J6-9	BCD 1.0 Hz-1
J1-T	A1A1J1-23	Loc 1 MHz-1
J1-U	A14J6-11	BCD 1.0 Hz-8
J1-V	A1A1J1-9	Loc 10 MHz-4
J1-W	A14J6-10	BCD 1.0 Hz-2
J1-X	A1A1J1-22	Loc 10 MHz-2
J1-Y	A14J6-12	BCD 1.0 Hz-4
J1-Z	A1A1J1-8	Loc 10 MHz-8
J1-AA	A1A1J1-15	Loc 100 Hz-4
J1-BB	A14J6-22	FEM 1 MHz-2
J1-CC	A1A1J1-2	Loc 100 Hz-1
J1-DD	A14J6-19	FEM 1 MHz-8
J1-EE	A1A1J1-14	Loc 100 Hz-2
J1-FF	A14J6-23	FEM 1 MHz-1
J1-HH	A1A1J1-1	Loc 100 Hz-8
J1-a	A14J6-24	BCD 0.1 Hz-8

TABLE 4-1
PLUG-IN/MAINFRAME INTERFACE (PMI)
WIRE LIST (cont)

From	To	Signal Name
J1-b	A1A1J1-21	Loc 10 MHz-1
J1-c	A14J6-25	BCD 0.1 Hz-4
J1-d	A1A1J1-17	Loc 1 kHz-4
J1-e	A14J6-5	BCD 10 Hz-1
J1-f	A1A1J1-20	Loc 1 kHz-2
J1-h	A14J6-26	BCD 0.1 Hz-2
J1-j	A1A1J1-6	Loc 1 kHz-1
J1-k	A14J6-20	BCD 10 Hz-8
J1-m	A1A1J1-19	Loc 1 kHz-8
J1-n	A14J6-13	BCD 0.1 Hz-1
J1-p	A1A1J1-5	Loc 1.0 Hz-4
J1-r	A14J6-7	BCD 10-Hz-4
J1-s	A1A1J1-18	Loc 1.0 Hz-2
J1-t	A14J6-6	BCD 10 Hz-2
J1-u	A1A1J1-4	Loc 1.0 Hz-8
J1-v	A14J6-14	BCD 100 Hz-1
J1-w	A1A1J1-17	Loc 1.0 Hz-1
J1-x	A14J6-2	BCD 100 Hz-8
J1-y	A14J6-8	0.05 Hz Log
J1-z	A14J6-21	FEM 1 MHz-4
J2-A	E1	GND
J2-B	A14J3-6	5.2V
J2-C	A10J5	30/40 MHz (coax)
J2-D	A14J3-7	5.2V
J2-E	A14J3-5	5.2V
J2-F	A1A1J2-13	Loc 0.1 Hz-8
J2-H	A10J10	29 MHz (coax)
J2-J	A1A1J2-26	Loc 10 Hz-4
J2-K	A14J5-1	BCD 10 kHz-8
J2-L	A1A1J2-12	Loc 0.1 Hz-4

TABLE 4-1
PLUG-IN/MAINFRAME INTERFACE (PMI)
WIRE LIST (cont)

From	To	Signal Name
J2-M	A7J2	29 MHz (coax)
J2-N	A1A1J2-25	Loc 10 Hz-8
J2-P	A14J5-6	BCD 10 kHz-1
J2-R	A1A1J2-11	Loc 0.1 Hz-2
J2-S	A14 J5-3	BCD 10 kHz-2
J2-T	A1A1J2-24	Loc 10 Hz-2
J2-U	A14J5-2	BCD 10 kHz-4
J2-V	A1A1J2-10	Loc 0.1 Hz-1
J2-W	Not Used	
J2-X	A1A1J2-23	Loc 10 Hz-1
J2-Y	A14J5-4	RESLT2
J2-Z	A1A1J2-9	Loc 100 MHz-4
J2-AA	A1A1J2-17	Loc 10 kHz-8
J2-BB	A14 J3-1	-12 VOP
J2-CC	A1A1J2-4	Loc 10 kHz-2
J2-DD	A14J3-9	-12 VOP
J2-EE	A14J3-4	5.2V
J2-FF	A14 J3-2	-12 VOP
J2-HH	A14J5-24	Loc/Rem
J2-a	Not Used	
J2-b	A1A1J2-22	Loc 100 MHz-2
J2-c	A14J5-5	RESLT1
J2-d	A14J5-11	Loc/Rem
J2-e	A14 J5-10	BCD 100 kHz-1
J2-f	A1A1J2-21	Loc 100 MHz-8
J2-h	A14J5-7	BCD 100 kHz-8
J2-j	A1A1J2-8	Loc 100 MHz-1
J2-k	A14 J5-9	BCD 100 kHz-2
J2-m	A1A1J2-20	Loc 1 GHz-4
J2-n	A14J5-8	BCD 100 kHz-4

TABLE 4-1
PLUG-IN/MAINFRAME INTERFACE (PMI)
WIRE LIST (cont)

From	To	Signal Name
J2-p	A1A1J2-7	Loc 1 GHz-2
J2-r	Not Used	
J2-s	A1A1J2-19	Loc 1 GHz-8
J2-t	A12S1-9	ACH-1 COAX
J2-u	A1A1J2-6	Loc 1 GHz-1
J2-v	A12 S1-11	ACN-1 COAX
J2-w	A1A1J2-18	Loc 10 kHz-1
J2-x	A12S1-8	ACH-2 COAX
J2-y	A1A1J2-5	Loc 10 kHz-4
J2-z	A12 S1-12	ACN-2 COAX

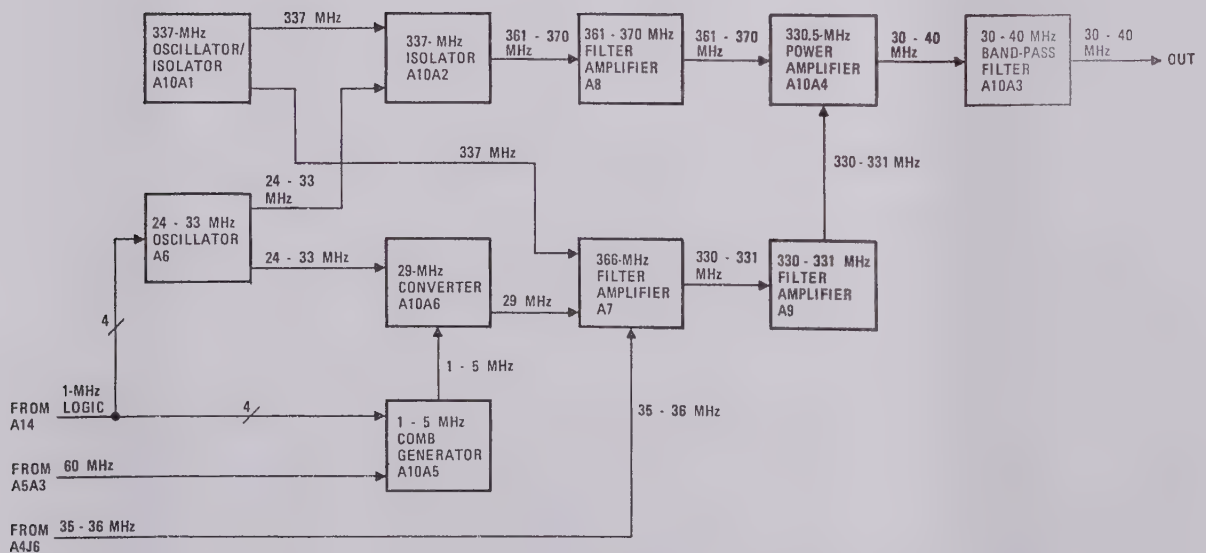


Figure 4-2. Frequency Extender, Functional Block Diagram

4-16. Another output of A6 is mixed in A10A2 with a 337-MHz signal from 337 MHz oscillator/isolator A10A1 to produce a 361- to 370-MHz output. This output is amplified and band-pass filtered in 361 to 370 MHz filter amplifier A8 and applied to a frequency converter on A10A4.

4-17. A second 337-MHz output of A10A1 is applied to 366 MHz filter amplifier A7 and mixed with the 29-MHz input from A10A6 to produce a 366-MHz signal. After band-pass filtering, the 366-MHz signal is mixed with the 35- to 36-MHz signal from the mainframe to produce a signal between 330 and 331 MHz. This signal is band-pass filtered in 330 to 331 MHz filter amplifier A9 and applied to 330.5 MHz power amplifier A10A4.

4-18. In 330.5 MHz power amplifier A10A4, the 330- to 331-MHz output of A9 is amplified and mixed with the 361 to 370 MHz output of A8 to produce a frequency between 30 and 40 MHz. This 30- to 40-MHz output is band-pass filtered in 30 to 40 MHz band-pass filter A10A3 before being applied to the plug-in unit being used.

4-19. The Drift Cancellation principle can be illustrated by observing what happens if the 24-33 MHz oscillator is deviated from its nominal value by a frequency error Δf . For the case where 30.000000 MHz is selected, a logic 'O' is programmed to the Frequency Extender module. The 24-33 MHz oscillator should be at 24 MHz and the 1-5 MHz comb generator is at 5 MHz. The frequency in the 361-370 MHz filter will then be Δf higher than 361 MHz. At the same time, however, the 29 MHz signal in A10A6 will be Δf high causing the 366 MHz signal in A7 to high by Δf also. This causes the 330 MHz signal to be high by Δf , but this signal is subtracted from the $361 \times \Delta f$ MHz signal in A10A4. The net result is $(361 + \Delta f) - (330 + \Delta f) = 30$ MHz which is exactly what was selected. Therefore any drift of the 24-33 MHz oscillator is cancelled by this technique.

4-20. TROUBLESHOOTING

4-21. FREQUENCY SYNTHESIZER MAINFRAME

4-22. Figure 4-3 is a troubleshooting chart for the frequency synthesizer mainframe. Through use of the chart and the servicing block diagram (Figure 4-4) a malfunction can be isolated to a board or subassembly. Figure 4-5 shows the location of all boards and subassemblies in the mainframe. To further isolate a malfunction to a defective component on a board or subassembly see the applicable paragraph on repair of the board or subassembly.

4-23. FREQUENCY EXTENDER.

4-24. The troubleshooting procedure philosophy for the frequency extender is the same as that for the mainframe as described in paragraph 4-22. Figure 4-6 is the troubleshooting chart, figure 4-7 is the servicing block diagram, and figure 4-8 shows the location of boards and subassemblies in the frequency extender.

4-25. REPAIR.

4-26. INTRODUCTION

4-27. The following paragraphs provide repair data for boards and subassemblies of the frequency synthesizer mainframe. (Repair data for the frequency extender is given in paragraphs 4-98 through 4-156.) The data is presented in the form of functional description (with significant circuit parameters), schematic diagrams, parts location diagrams, and references to the servicing block diagrams, replaceable parts list, and recommended test equipment to be used (see Table 1-6). With all of the data presented, an experienced technician should be able to isolate a malfunction to a component on a board or subassembly with the board or subassembly either in the frequency synthesizer (normal system signals being used) or on a bench (simulated signals being used).

4-28. Repair data for each printed circuit board can be found on the servicing block diagram, the referenced schematic diagrams, and in the functional descriptions. To facilitate identification of parts, component location diagrams are included for each printed circuit card. A description of each component is given in Chapter 5.

4-28A. FREQUENCY SELECT SWITCH ASSEMBLY A1A1 (Figure 4-9).

4-28B. This assembly consists of a printed circuit board and 11 pushbutton frequency select switches. Each switch generates a four bit BCD code for the decimal digit selected for the particular decade. The information generated by this unit is the LOCAL frequency input to the logic converter in the plug-in. Figure 4-9 is the schematic of this assembly.

4-29. LOWER AND HIGHER ORDER BCD SECTION

4-30. The BCD section consisting of modules A2 and A4 form the heart of the frequency synthesizer mainframe. This special unit has 5 BCD decades generating 10^5 frequency steps with a 10.0-Hz resolution. The three lower order decades, are housed in lower order BCD A2. The function of each decade is essentially similar,

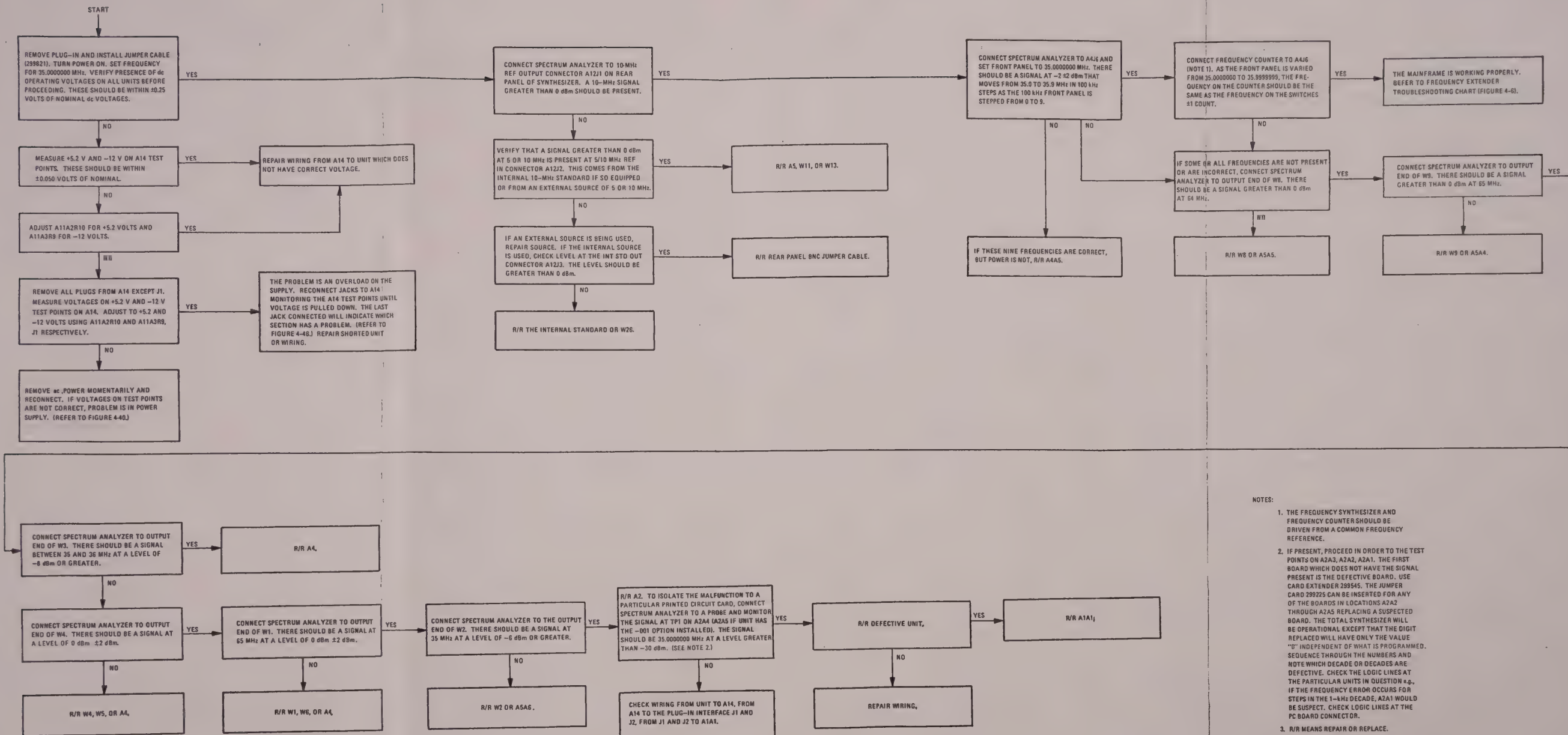


Figure 4-3. Frequency Synthesizer Mainframe, Troubleshooting Chart

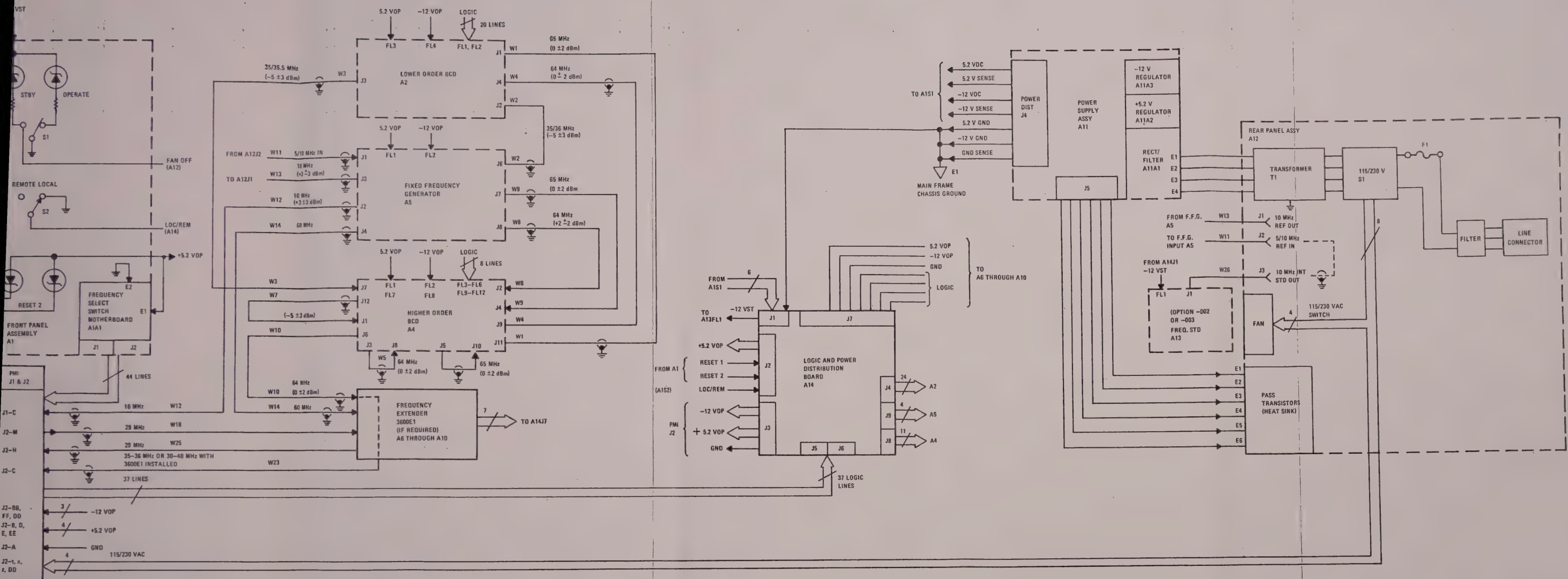


Figure 4-4. Frequency Synthesizer Mainframe, Servicing Block Diagram

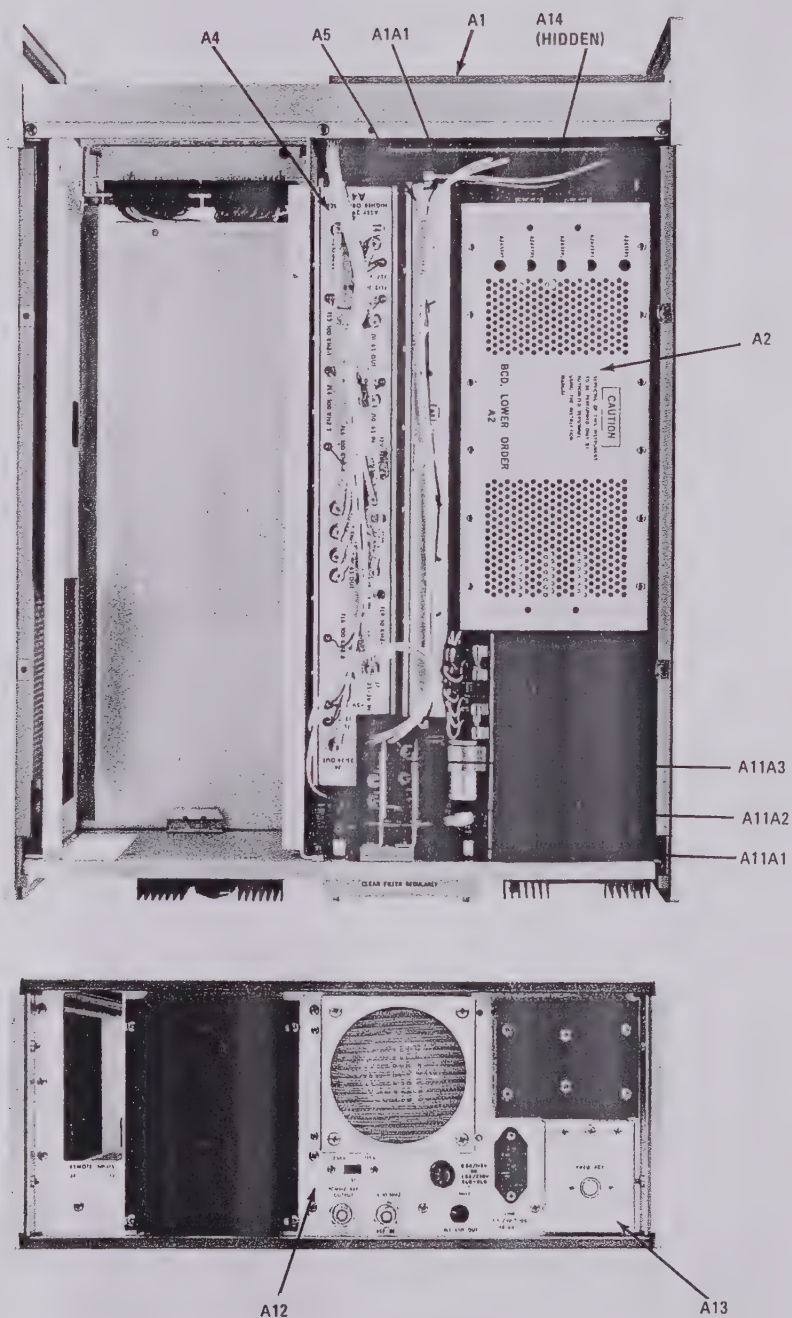


Figure 4-5. Frequency Synthesizer Mainframe, Subassembly Locations

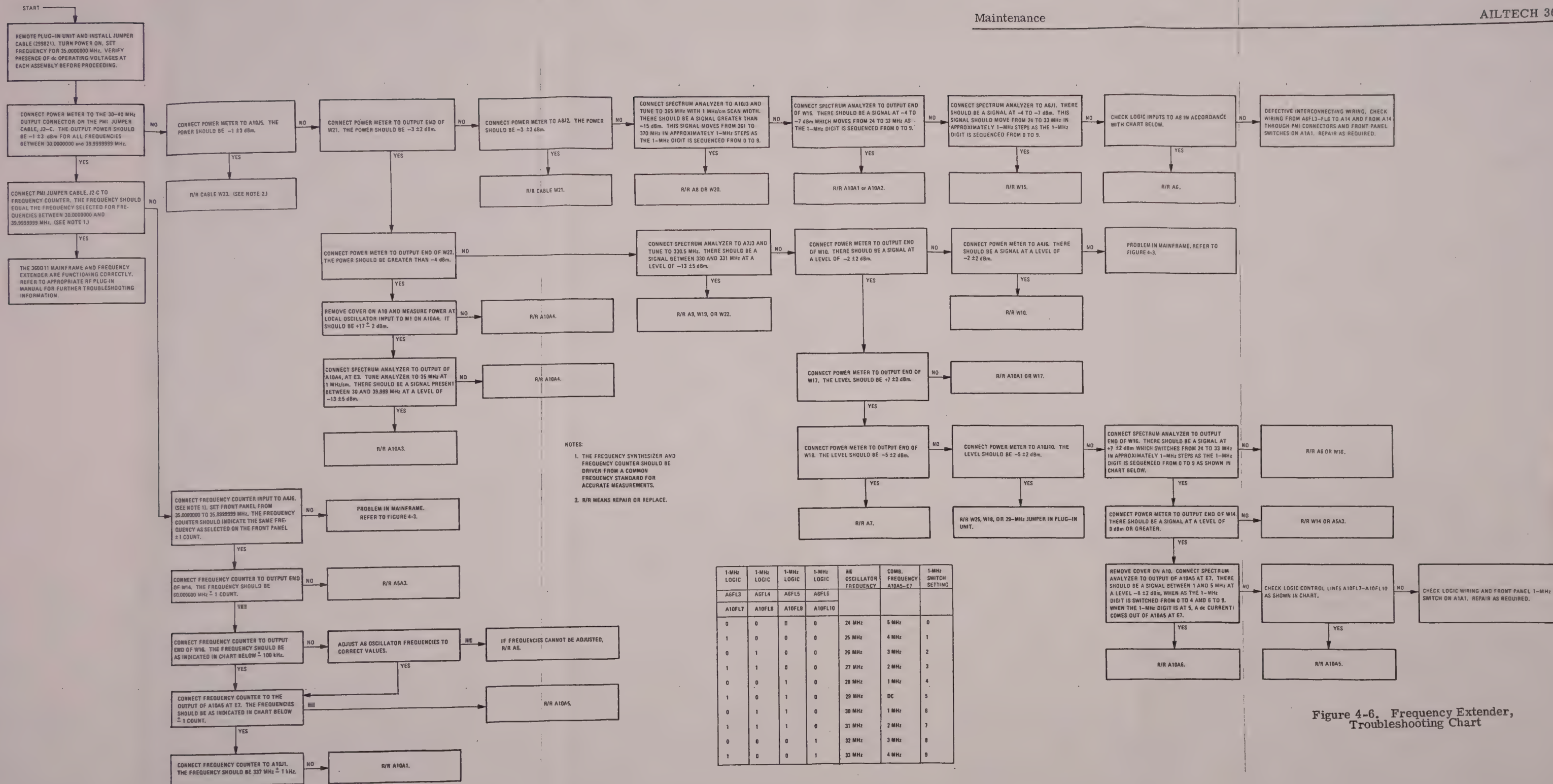


Figure 4-6. Frequency Extender, Troubleshooting Chart

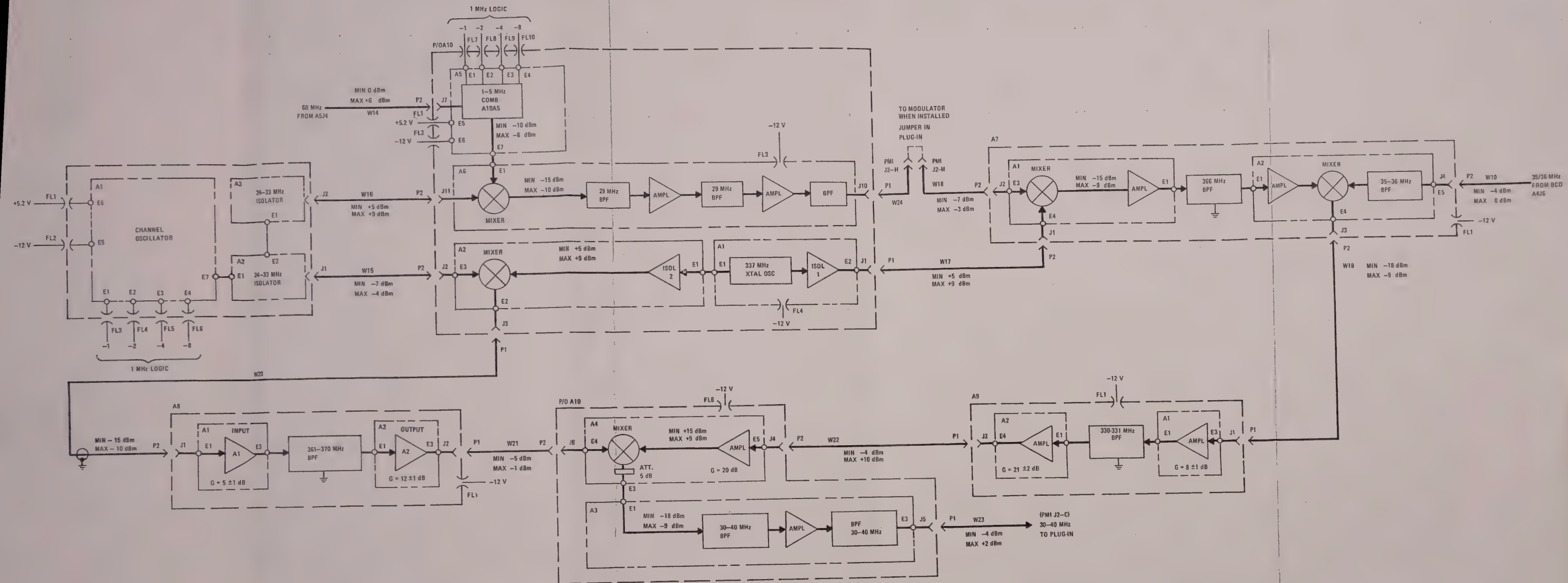


Figure 4-7. Frequency Extender, Servicing Block Diagram

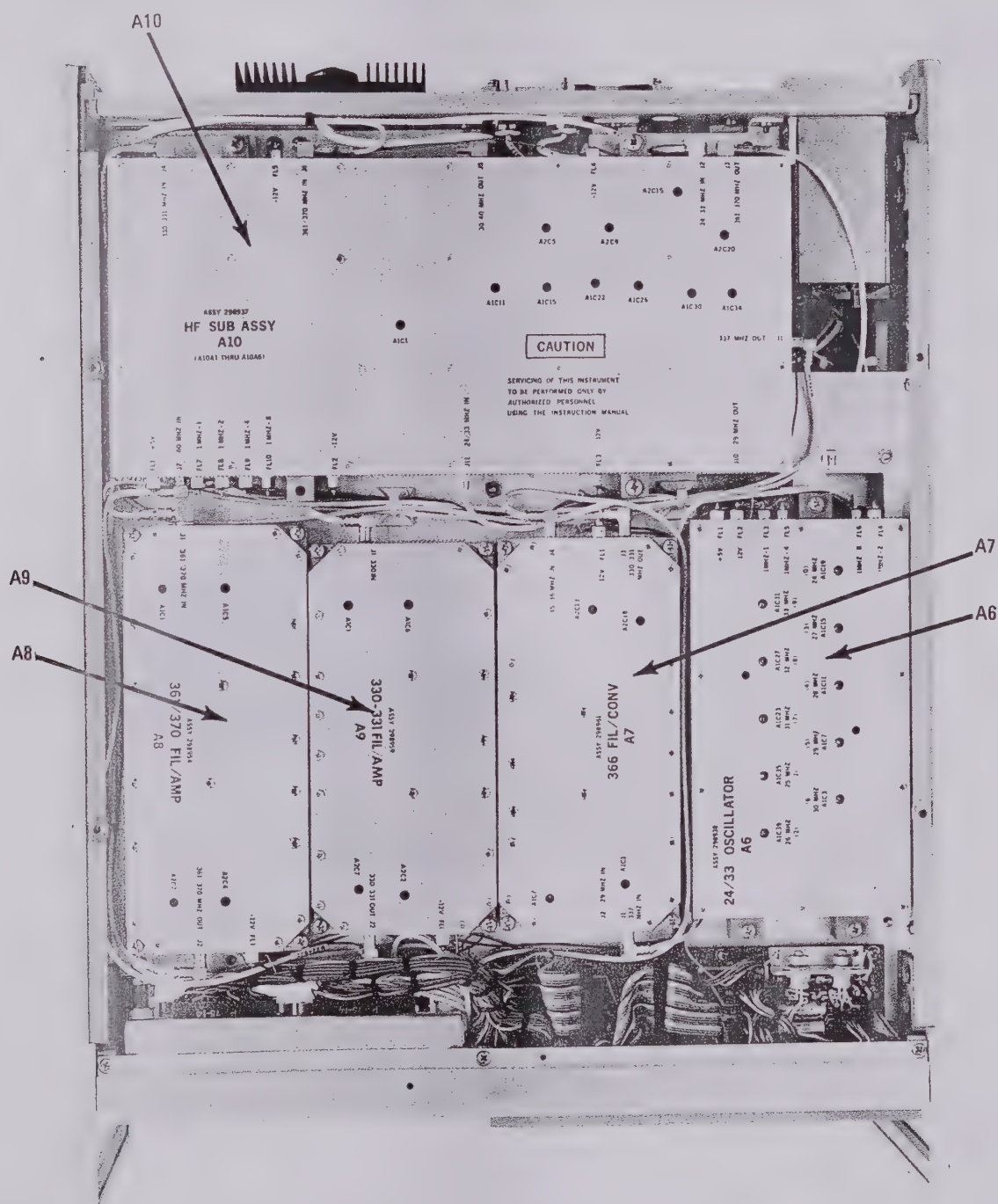


Figure 4-8. Frequency Extender, Subassembly Locations

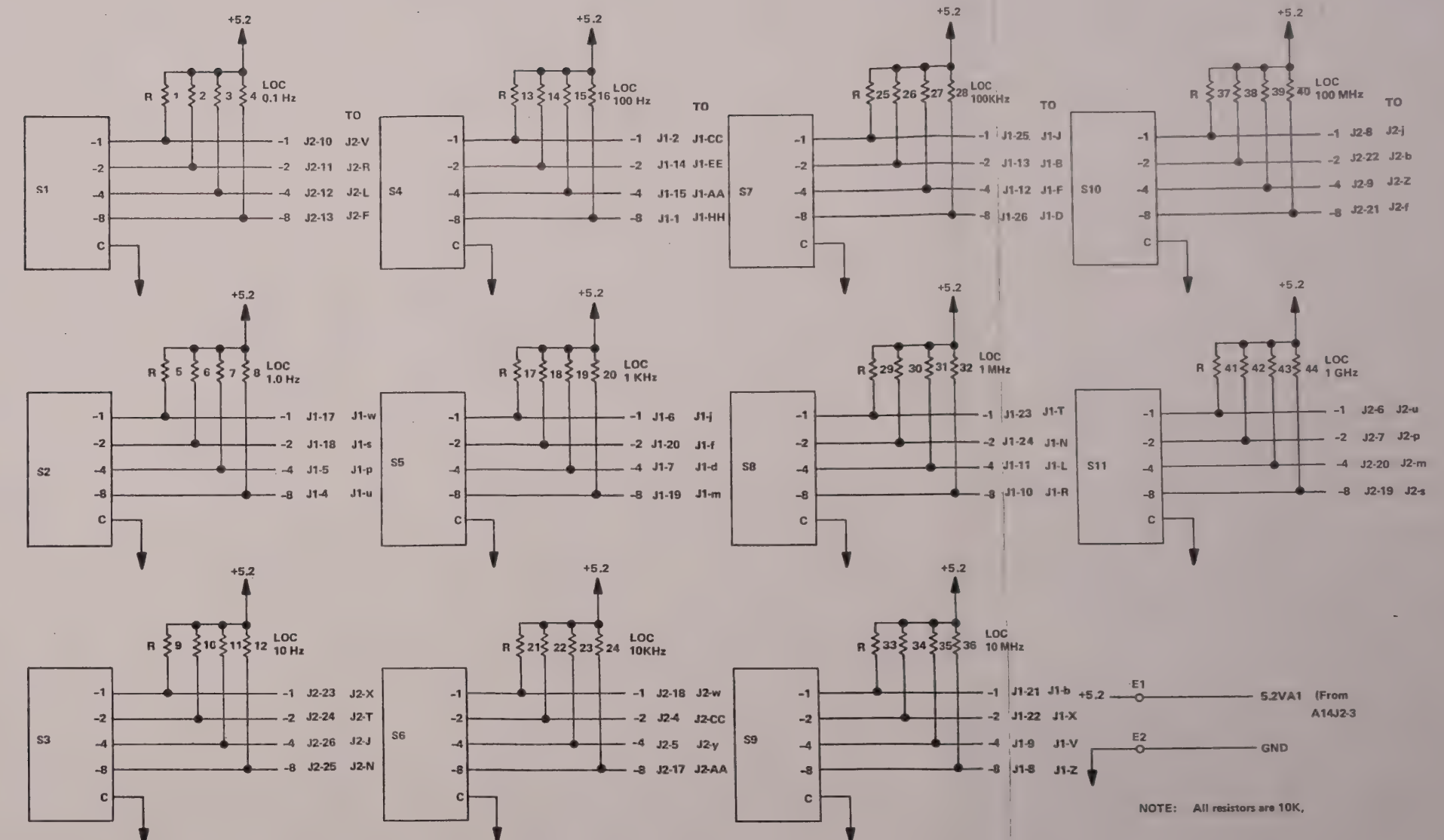
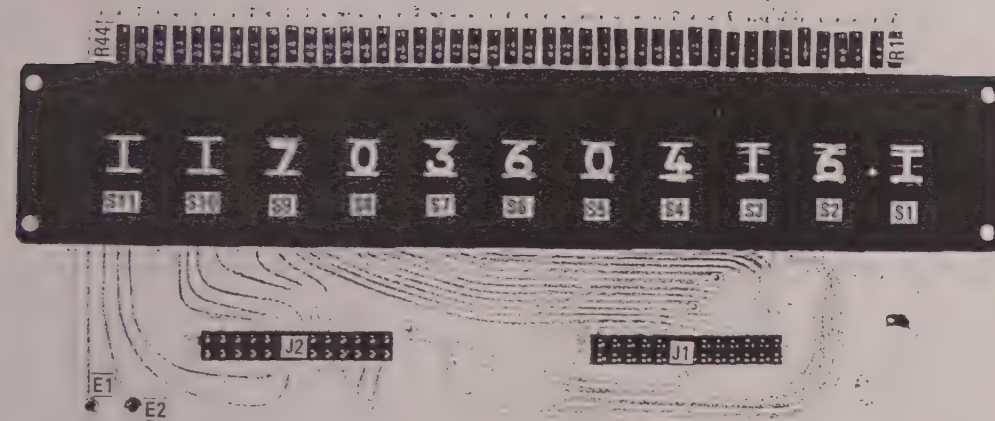
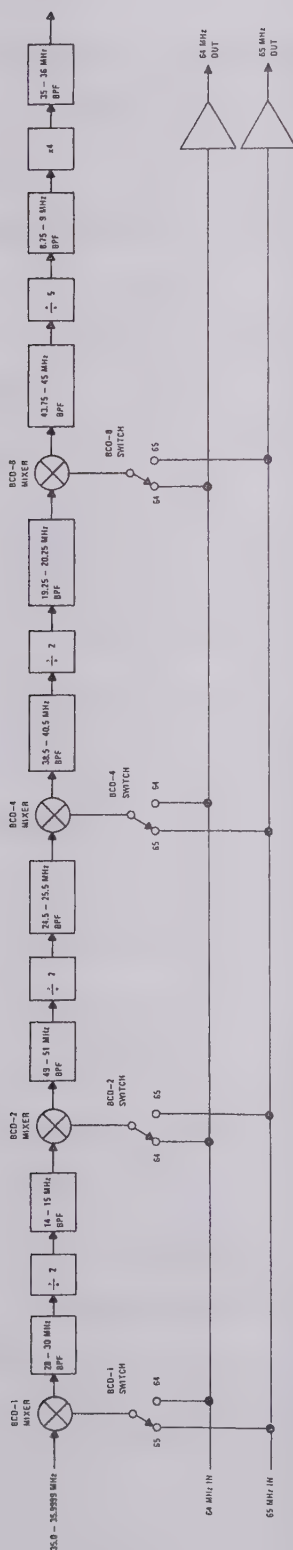


Figure 4-9. Frequency Select Switch A1A1, Schematic Diagram and Component Locations

therefore, the following paragraphs describe the basic theory of a BCD decade. The details of how each module differs will be discussed in later paragraphs under the separate modules.

4-31. Figure 4-10 shows the basic block diagram of all BCD decades. The function of the decade is to provide 10 discrete frequency outputs controlled by a BCD logic code. Given an input frequency of 35.0 MHz and the two comb line frequencies of 64 MHz and 65 MHz, the output frequency will be between 35.0 and 35.9 MHz, depending on the BCD code. If the BCD code is a 3, the output will be 35.3 MHz.

4-32. To understand the operation of the decade, trace a signal through the block diagram of any BCD decade. A starting frequency is chosen at 35 MHz and all RF switches are shown in their 0 position; in other words, a BCD 0 is programmed. In the BCD-1 mixer, a 35-MHz input signal mixes with the 65-MHz LO signal to form a 30-MHz product. This 30-MHz product passes through a 28-30 MHz bandpass filter and is applied to a flip-flop operating in a divide-by-two mode. The output of the flip-flop is a 15-MHz signal which is passed through a 14-15 MHz bandpass filter. This 15-MHz signal is applied to the second mixer where it mixes with 64 MHz generating a 49-MHz signal at the IF port. The 49-MHz signal passes through a 49-50 MHz bandpass filter and again into a flip-flop acting as a divide-by-two circuit. The output of this second divider is a signal of 24.5 MHz. This signal passes through a 24.5 to 25.5 MHz band-pass filter and is applied to the third mixer. The 24.5-MHz signal mixes with 65 MHz generating a signal at 40.5 MHz. This in turn passes through a 38.5 to 40.5 MHz band-pass filter and again a divide-by-two flip-flop generating a signal of 20.25 MHz. This signal passes through a 19.25 to 20.25 MHz band-pass filter and becomes the RF signal for a fourth mixer. The 20.25-MHz signal mixes with 64 MHz producing a mixed product at 43.75 MHz. This frequency is divided by 5 and then multiplied by 4 producing a 35-MHz output. Therefore, for a 35-MHz input with all switches in the zero position, a 35-MHz output results. Now, leave the BCD code in the zero position and apply a 36-MHz signal to the input, which is a 1-MHz change on the input frequency. When tracing this signal through, it is found that out of the first mixer 29 MHz appears, and after the frequency divider the signal is 14.5 MHz. Mixing this again with 64 MHz results in a 49.5-MHz signal and after the frequency divider, 24.75 MHz. After the third mixer the signal is 40.25 MHz and after the fourth mixer the signal is 43.825 MHz resulting in 35.1 MHz at the output. From this example, it is seen that 1 MHz change on the input produces 0.1 MHz on the output or an effective division ratio of 10 going through any BCD decade. This is an important fact because the divide by 10 provided 20 dB of improvement in spurs and noise through each decade.



4-33. To further understand the operation, trace through what happens as the BCD-8 switch is set to logic "1". If the BCD-8 switch is thrown to the 1 position, the input of the mixer increases by 1 MHz. The mixer is followed by a multiplication of 0.8 so that the output signal increases in frequency by 0.8 MHz. Thus, this switch has the relative weight of 8. A binary divider separates the BCD-4 mixer from the BCD-8 mixer; in effect a 1-MHz change from the BCD-4 switch is half of the BCD-8 so this switch has a relative weight of 4. In a similar manner, the BCD-2 switch has a relative weight of 2 and the BCD-1 switch has a relative weight of 1. Therefore, each decade, for a 35.0 MHz input, can generate an output of 35.0, 35.1 all the way up to 35.9 directly from a BCD code. In addition, if the BCD code were a 1 for 35.0 MHz input, then the output frequency would be 35.1 MHz. However, if the input frequency was 35.5, then the output would be 35.15. In other words, for a frequency input of 35.X and a BCD code into the decade of N, the output frequency is 35.NX. Therefore, by cascading 6 of these decades it is seen that the output frequency is anywhere from 35 to 35.999999 MHz in 1 Hz steps. Table 4-2 shows the output frequency and output of the four 64/65 MHz switches for each BCD code on the input to the decade. The output frequency assumes a 35.000000 MHz input.

TABLE 4-2
BCD SWITCH CODING

Output Frequency	BCD CODE				BCD-1 Switch	BCD-2 Switch	BCD-4 Switch	BCD-8 Switch
	-1	-2	-4	-8				
35.00	0	0	0	0	65	64	65	64
35.10	1	0	0	0	64	64	65	64
35.20	0	1	0	0	65	65	65	64
35.30	1	1	0	0	64	65	65	64
35.40	0	0	1	0	65	64	64	64
35.50	1	0	1	0	64	64	64	64
35.60	0	1	1	0	65	65	64	64
35.70	1	1	1	0	64	65	64	64
35.80	0	0	0	1	65	64	65	65
35.90	1	0	0	1	64	64	65	65

4-34. LOWER ORDER BCD A2. (See Figure 4-11.)

4-35. Lower order BCD module A2 (Figure 4-12) in the mainframe consists of 1-kHz BCD decade board A2A1 and two, 10.0-100 Hz BCD decade boards, A2A2 and A2A3, and a fourth position A2A4 and a fifth position, A2A5, contain jumper boards.

4-36. 1 kHz DECADE BOARD A2A1 (Figure 4-13).

4-37. The 1 kHz, decade board (figure 4-14) controls the 1-kHz digit in the frequency synthesizer output. The A2A1 output is 35 to 35.999995 MHz depending on the input frequency and BCD code from the 1-kHz logic as previously described. The output level should be greater than -8 dBm. This board contains 64-MHz and 65-MHz buffer amplifiers Q33 and Q34, respectively, which drive the 64 and 65 MHz inputs of A2A2 through A2A5. The level of these signals should be greater than 0 dBm. The remainder of this discussion assumes an input of 35.0000000 MHz.

4-38. The 35-MHz input signal to A2A1 is ac coupled through capacitor C1 to BCD-1 mixer integrated circuit U1-pin 11. The signal at this point is 35 MHz, 0.3V peak-to-peak centered around -7 Vdc. This signal is mixed with 65 MHz from the BCD-1 switch, Q1 through Q7. The 65 MHz enters the U1 mixer at pin 5 at a level of 0.7V peak-to-peak centered around -9.4 Vdc. The 65-MHz and 35-MHz signals are mixed in U1 and the composite signal appears at pin 3 at a level of 0.6V peak-to-peak centered around 2 Vdc. The lower sideband of the 30-MHz composite signal, is selected by 28-30 MHz band-pass filter comprising L1, L2, C9, C10, and C11. The 30 MHz is amplified by driver Q8 to a level of 2 volts peak-to-peak to drive divide-by-two circuit U2. The output of U2 is a 15-MHz square wave at about 2.5V peak-to-peak. This 15.0-MHz square wave is filtered by the 14-15 MHz band-pass filter formed by L4, L5, C13, C14, and C79, and is applied to pin 11 of U3 at a level of 1V peak-to-peak centered around 7.5 Vdc.

4-39. Integrated circuit U3 functions as a BCD-2 mixer. The 64-MHz output of BCD-2 switch Q9 through Q15 is applied to U3 pin 5 at a level of 0.7V peak-to-peak centered on -9.4 Vdc. The 64 MHz mixes with 15 MHz and the composite signal appears at pin 3 at a level of 0.5V peak-to-peak centered around 3.0 Vdc. The lower sideband of this composite signal, 49 MHz, is filtered by 49-51 MHz band-pass filter comprising L6, L7, C22, C23, and C24 and amplified by driver Q16. This signal is applied to a flip-flop which acts as a frequency divider producing 24.5 MHz. The input to U4 pin 13 is a 49-MHz sine wave

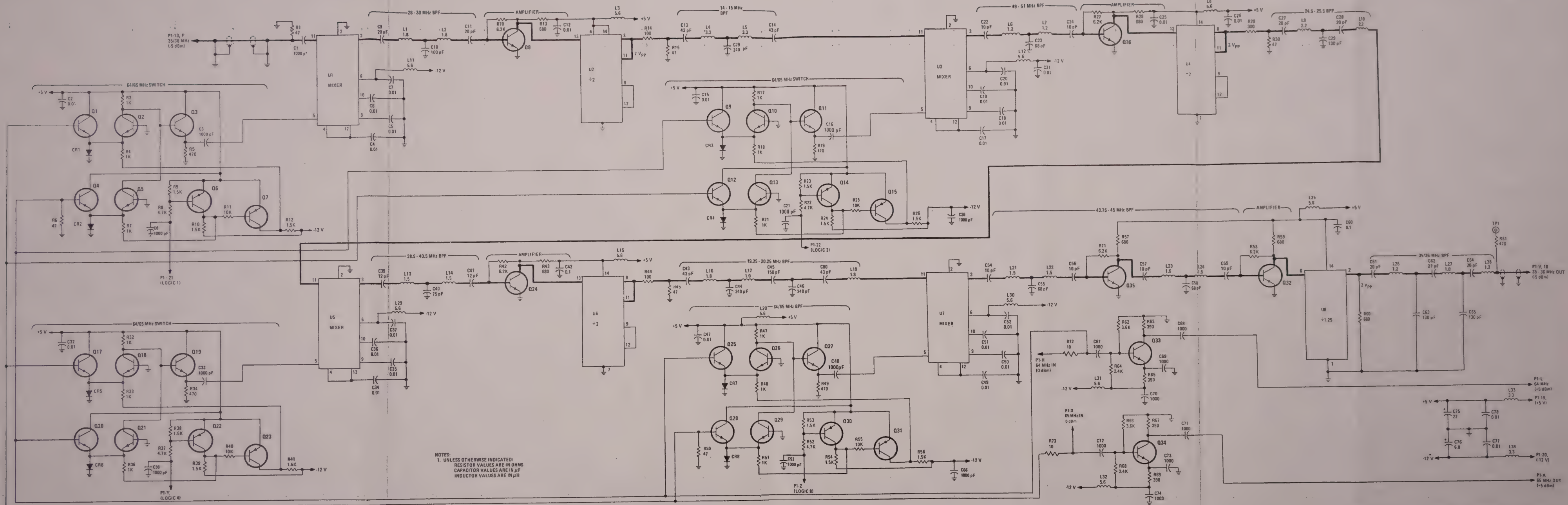


Figure 4-13. 1-kHz Decade Board A2A1, Schematic Diagram

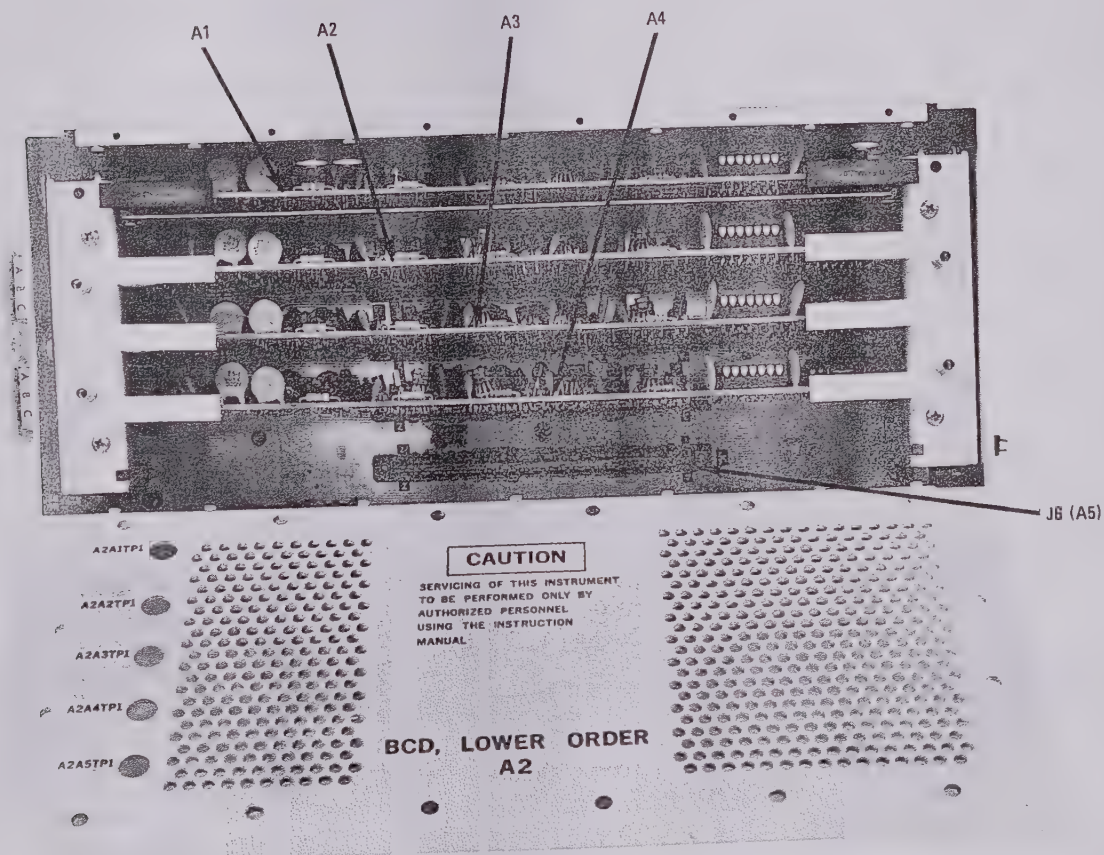


Figure 4-12. Lower Order BCD Assembly A2

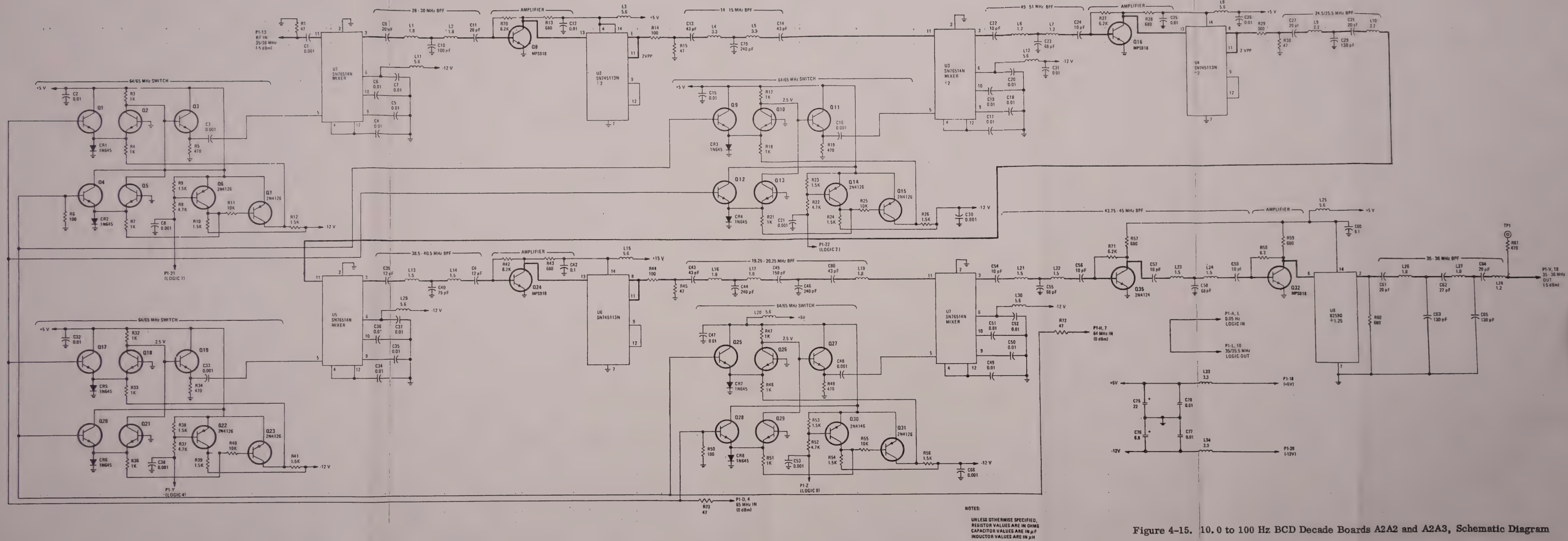


Figure 4-15. 10.0 to 100 Hz BCD Decade Boards A2A2 and A2A3, Schematic Diagram



Figure 4-14. 1-kHz Decade Board A2A1, Component Locations

centered at 1 Vdc and approximately 1.5V peak-to-peak. The output of U4 at 24.5 MHz is passed through a 24.5-25.5 MHz band-pass filter formed by L9, L10, C27, C28, and C29.

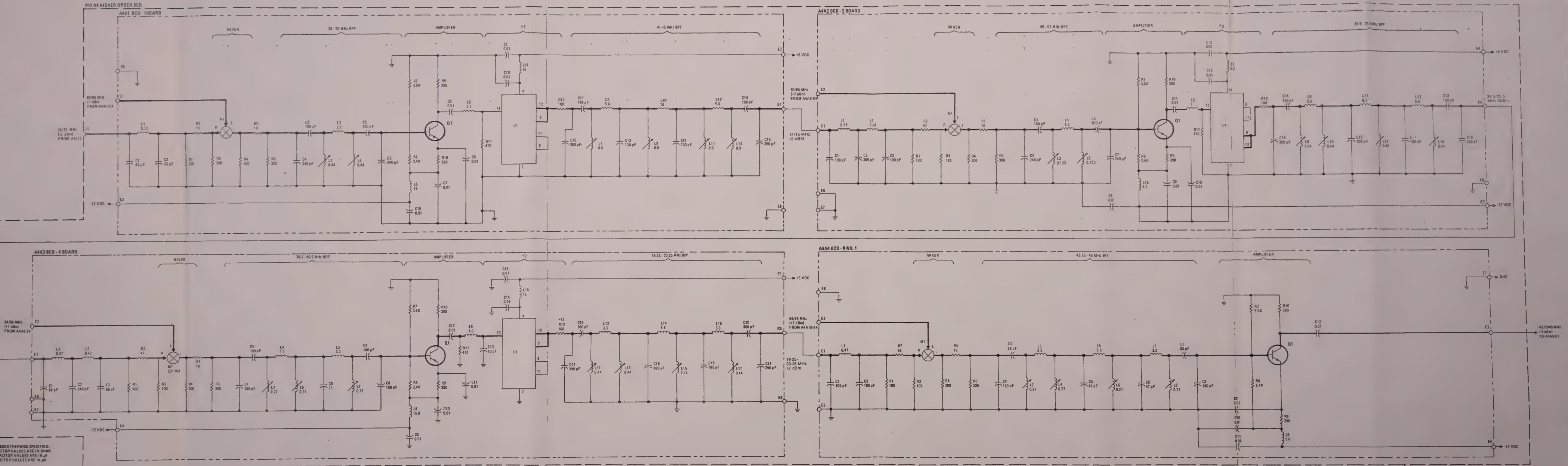
4-40. The output of the 24.5-25.5 MHz band-pass filter connects to the BCD-4 mixer, U5 pin 11. The signal is 24.5 MHz at a level of 0.6V peak-to-peak centered at -2.4 Vdc. This signal is mixed in U5 with the output of the BCD-4 switch, a 65-MHz signal of 0.7V peak-to-peak centered around -9.4 Vdc. The BCD-4 switch is made up of transistors Q17 through Q23. The output of the U5 mixer appears at pin 3 at a level of 0.7V peak-to-peak centered around -2.3 Vdc. The lower sideband at this composite signal, 40.5 MHz, is selected by a 38.5-40.5 MHz band-pass filter consisting of L13, L14, C39, C40, and C41, amplified by driver Q24, and applied to U6 at a level of 1.5V peak-to-peak at a dc level of 1.0 volt. Flip-flop U6 functions as a frequency divide-by-two circuit producing a 20.25-MHz output signal. This signal is passed through a 19.25 to 20.25 MHz band-pass filter consisting of L16, L17, L19, C43, C44, C45, C46, and C80.

4-41. The filtered 20.25-MHz signal is the RF input to BCD-8 mixer U7. This input is at pin 11 at a level of 0.8 peak-to-peak centered around -6.6 Vdc. It is mixed with the output of the BCD-8 switch formed by transistors Q25 through Q31. The output of this switch at U7 pin 5 is 64 MHz at 0.7V peak-to-peak centered around -9.4 Vdc. This mixes with the 20.25 MHz producing a composite signal at pin 3 of 1.0V peak-to-peak centered around -1.75 Vdc. The lower sideband of this signal, 43.75 MHz, is selected by the 43.75-45 MHz band-pass filter, consisting of L21-L24 and C54-C59. The signal is amplified by Q35 so that the output of the filter is at a sufficient level for the driver.

4-42. The filtered signal is amplified by driver Q32 and applied to U8. Integrated circuit U8 is a frequency divider which divides the 43.75 MHz by 5 producing 8.875 MHz rich in harmonics due to fast rise times on the output of U8. The fourth harmonic of the 8.875 MHz signal is selected by the 35-36 MHz band-pass filter consisting of L26, L27, L28, C61, C62, C63, C64, and C65. The input to U8 at pin 6 is 43.75 MHz at 2V peak-to-peak at a level of 1.25 Vdc. The output of the 35-36 MHz filter is 0.4V peak-to-peak or -5 dBm.

4-43. 10.0 to 100 Hz BCD DECADE BOARDS A2A2 THROUGH A2A3. (See figure 4-15.)

4-44. The 10.0 to 100 Hz BCD decade boards A2A2, and A2A3, are identical to each other and are similar to A2A1. The only difference between these boards and A2A1, is that these boards do not contain 64 and 65 MHz buffer amplifiers Q33 and Q34. See Figure 4-16 for component location of board A2A2.

Figure 4-18. BCD Boards A4A1-A4A4
Schematic Diagram

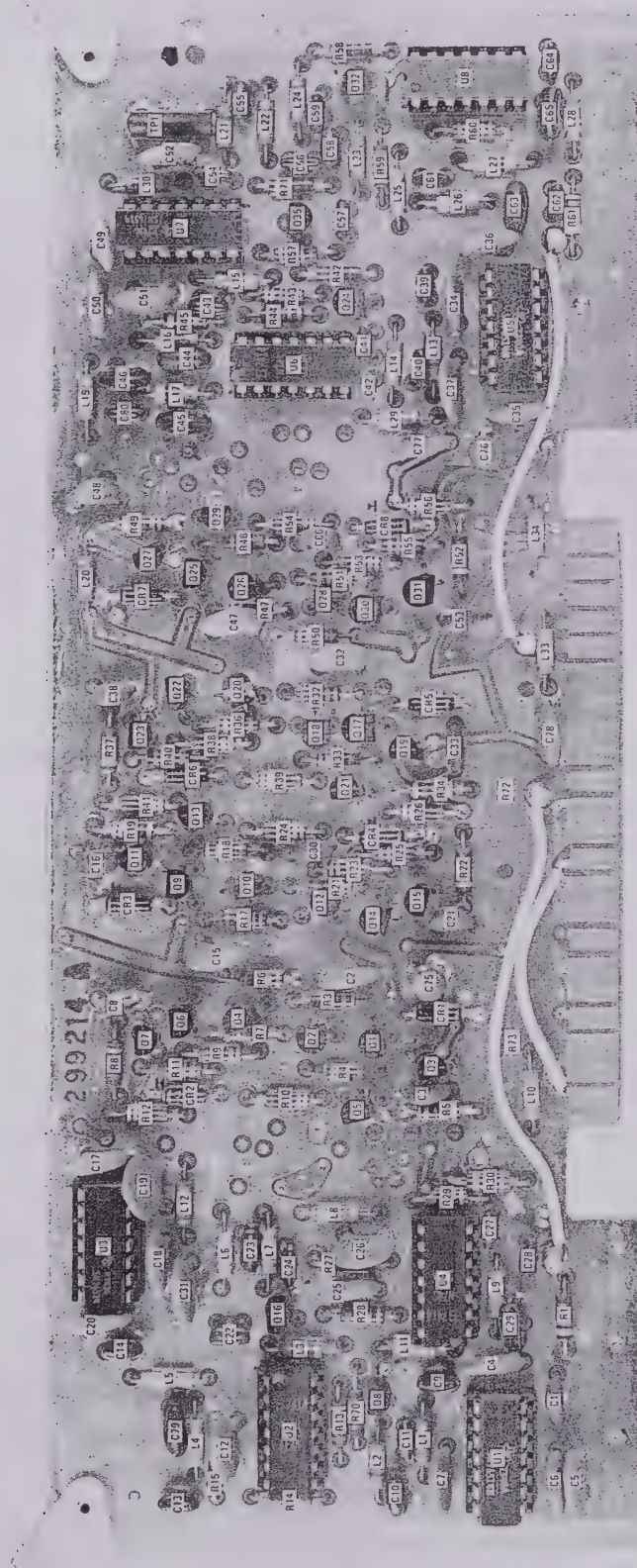


Figure 4-16. 10.0 to 100 Hz BCD Decade Boards A2A2-A2A3, Component Locations

4-45. HIGHER ORDER BCD A4.

4-46. Higher order BCD module A4 (Figure 4-17) produces the 100-kHz and 10-kHz decades in the mainframe output. The 10-kHz decade is contained on board A4A11; the 100-kHz decade is contained on boards A4A1 through A4A10.

4-47. BCD-1 BOARD A4A1. (See Figures 4-18 and 4-19.)

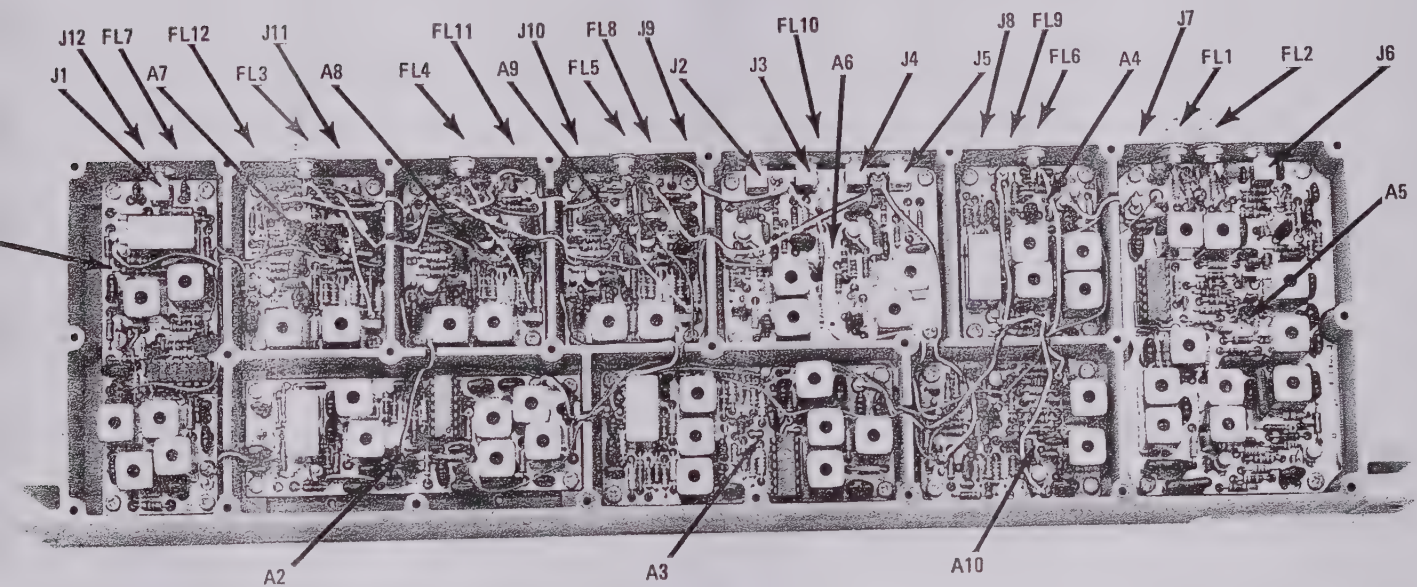
4-48. The input to A4A1 is a 35- to 36-MHz signal at -5 dBm which comes from 10 kHz BCD board A4A11. This signal passes through a low-pass filter (C1, C2, and L1) and a 3-dB pad and is applied to the RF input of mixer M1. The local oscillator for the mixer is 64 or 65 MHz from BCD-1 switch A4A7. The mixed signal is passed through the 28 to 30 MHz band-pass filter consisting of C3 through C6 and L2, L3, and L4 which selects the lower sideband. This signal is amplified in Q1 and applied to U1 which acts as a frequency divide-by-two circuit. The output of U1 is filtered by 14 to 15 MHz band-pass filter C10 through C15 and L7 through L13 which provides a 14-15 MHz signal at E4 at a level of +3 dBm.

4-49. BCD-2 BOARD A4A2. (See Figures 4-18 and 4-20).

4-50. The input to BCD-2 board A4A2 is the 14- to 15-MHz output from A4A1. This signal passes through a low-pass filter and attenuator comprising of C1, C2, C3, L1, L2, R1, R2, and R3 and is applied to mixer M1 at a level of -5 dBm. This signal is mixed with 64 or 65 MHz from BCD-2 switch A4A8. The lower order sideband of the mixer is selected by the 49- to 51-MHz band-pass filter consisting of C4 through C7, and L3 through L5. This signal is amplified in Q1 and applied to U1 which acts as a frequency divider-by-two. The output of U1 is filtered by 24.5 to 25.5 MHz band-pass filter C14 through C19 and L8 through L14. The output of this filter appears at E5 at a level of 0 dBm.

4-51. BCD-4 BOARD A4A3. (See Figures 4-18 and 4-21.)

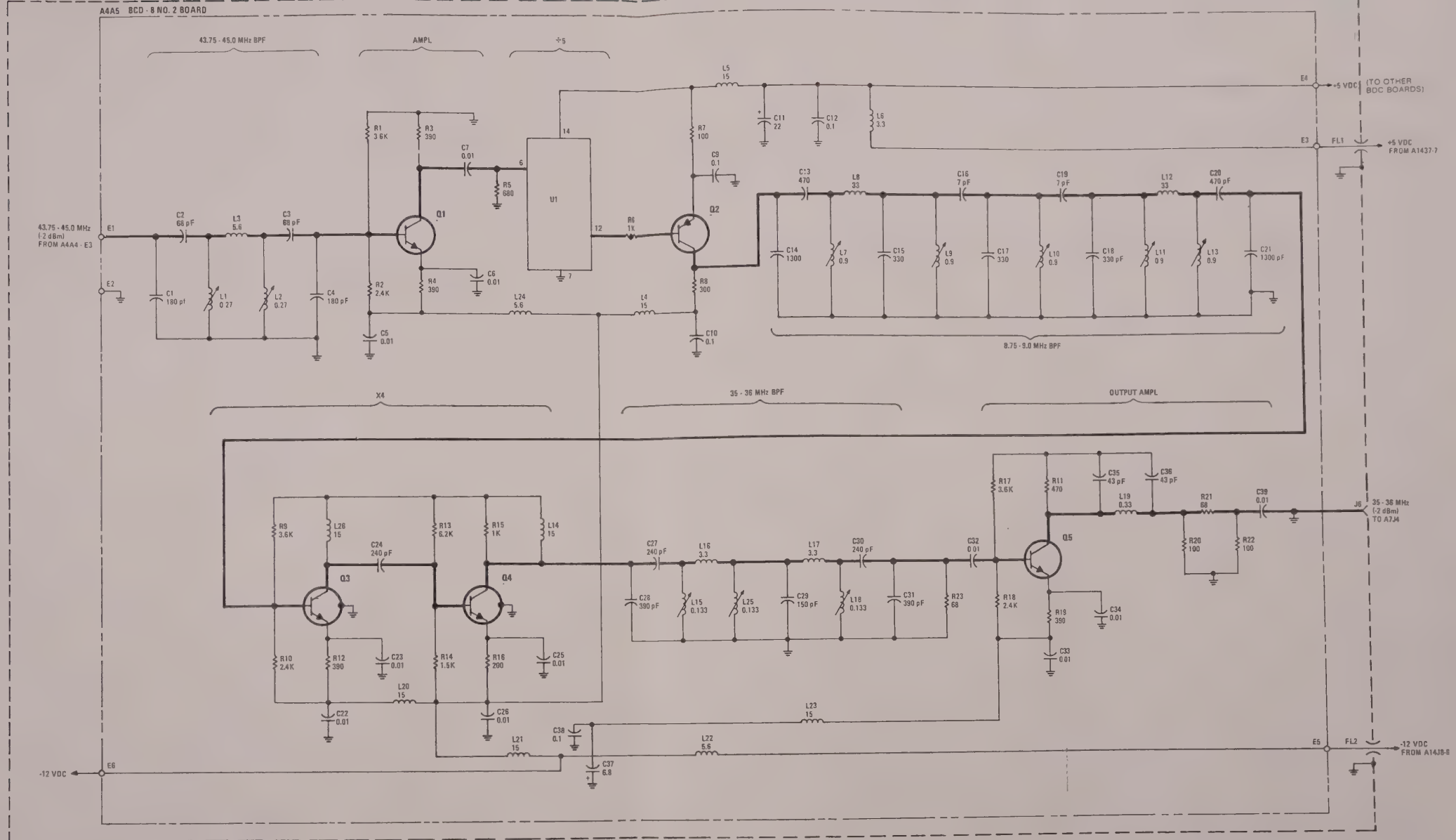
4-52. The input to BCD-4 board A4A3 is the 24.5- to 25.5-MHz output from A4A2. This signal is passed through a low-pass filter and attenuator comprising of C1, C2, C3, L1, L2, R1, R2, and R3, and applied to mixer M1. This signal is mixed with 64 or 65 MHz from BCD-4 switch A4A9. The lower sideband of this mixer is selected by the 38.5 to 40.5 MHz band-pass filter consisting of C4 through C8 and L3 through L7. This signal is amplified by Q1 and applied to U1 which acts as a frequency divider-by-two circuit. The output of U1 is filtered by 19.25 to 20.25 MHz band-pass filter C16 through C21 and L11 through L17. The output of this filter appears at E3 at a level of +2 dBm.



ASSY 296934
HIGHER ORDER BCD
A4
(A4A1 THRU A4A10)

Figure 4-17. Higher Order BCD Assembly A4

P/O A4 HIGHER ORDER BCD



NOTES:
UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE IN OHMS
CAPACITOR VALUES ARE IN μF
INDUCTOR VALUES ARE IN μH

Figure 4-23. BCD-8-2 Board A4A5,
Schematic Diagram

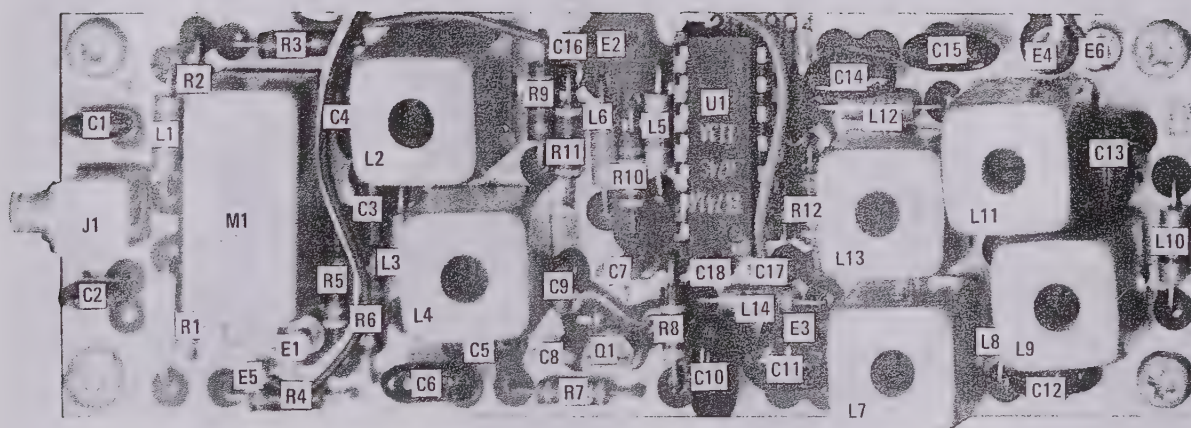


Figure 4-19. BCD-1 Board A4A1 Component Locations

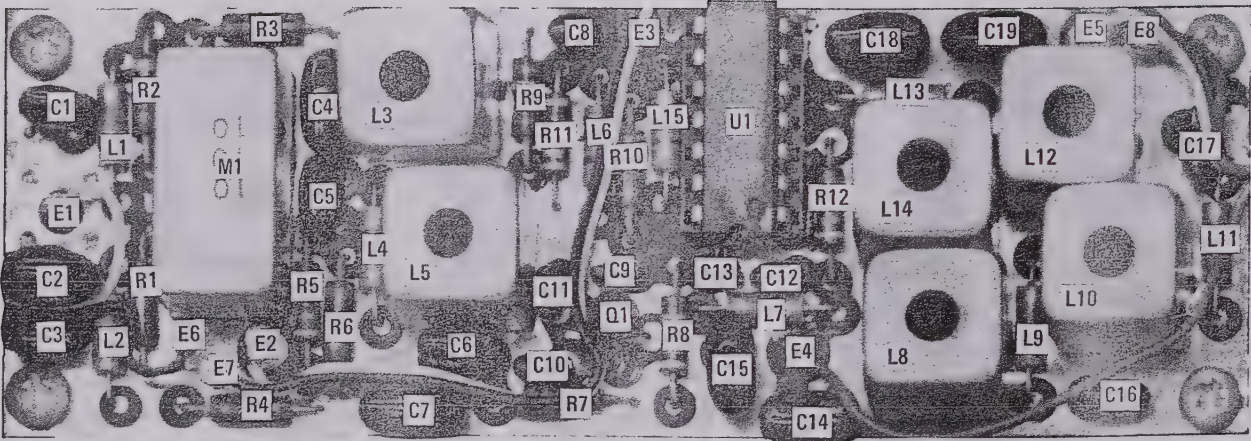


Figure 4-20. BCD-2 Board A4A2 Component Locations

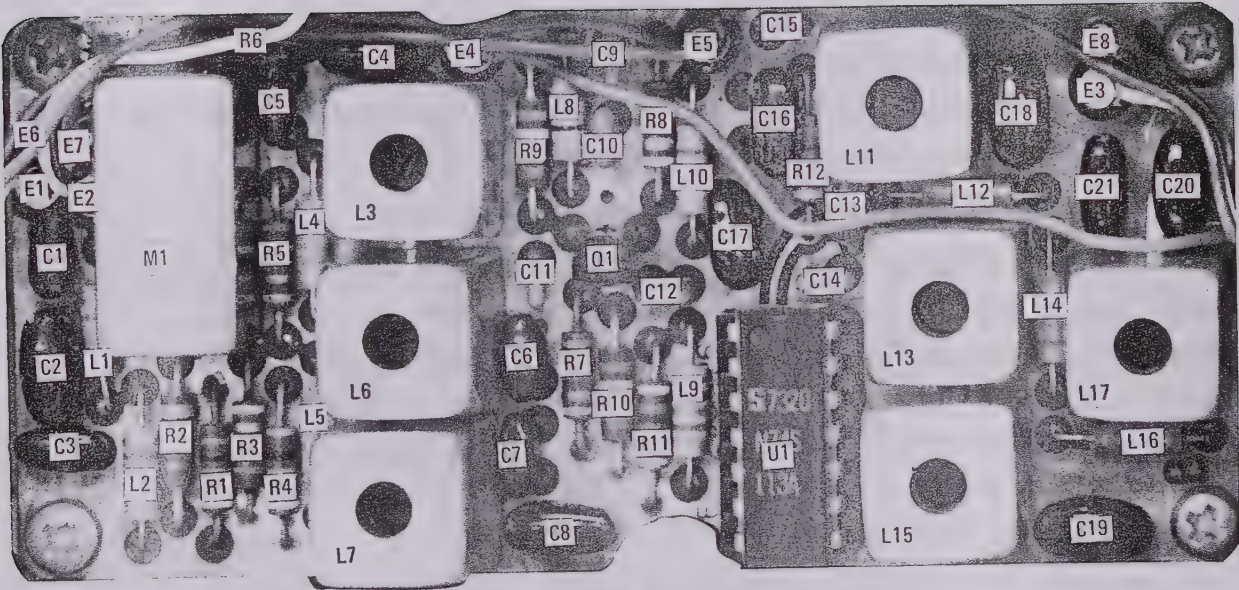


Figure 4-21. BCD-4 Board A4A3 Component Locations

4-53. BCD-8 (NO. 1) BOARD A4A4. (See Figures 4-18 and 4-22.)

4-54. FUNCTIONAL DESCRIPTION (See Figure 4-18). The 19.25-20.25 MHz signal from A4A3 is applied to A4A4 at E1 and is filtered by low-pass filter C1, C2, L1 and attenuator R1, R2, and R3. The signal is applied to mixer M1 where it mixes with 64 or 65 MHz from BCD-8 switch A4A10. The lower sideband from the mixer is selected by the 43.75 to 45.0 MHz band-pass filter formed by C3 through C8 and L2 through L8. This signal is amplified to a level of -5 dBm and applied to BCD-8 (No. 2) board A4A5.

4-55. BCD-8 (NO. 2) BOARD A4A5. (See Figures 4-23 and 4-24.)

4-56. The 43.75- to 45.0-MHz input signal from A4A4 is filtered by the band-pass filter formed by C1 through C4, and L1-L3 and amplified by Q1 to a level sufficient to drive U1. U1 is a frequency divide-by-5 circuit producing an output equal to one fifth the input or 8.75 to 9.0 MHz. This signal is amplified and passed through a 250 kHz bandwidth filter consisting of C13 through C21 and L7 through L13. The output of this filter is multiplied by 4 in the multiplier section consisting of Q3 and Q4. C27 through C31, L15 through L18, and L25 form a band-pass filter at the 35- to 36-MHz output frequency to reject the 8.75- to 9.0-MHz sidebands of the multiplier. The 35- to 36-MHz signal is amplified in transistor stage Q5 and passed through a low-pass filter (C35, C36, L19) and attenuator (R20, R21, and R22) to produce an output signal about -2 dBm. This signal is the final output of the mainframe.

4-57. BUFFER AMPLIFIER A4A6. (See Figures 4-25 and 4-26.)

4-58. The 64- and 65-MHz inputs at J2 and J4 are amplified by transistor stages Q1 and Q2, respectively. The output of Q1 is filtered by a 64-MHz filter consisting of C4 through C7 and L3 through L5 and connects to the 64-MHz input of 10 KHz BCD board A4A11 through a 3-dB attenuator comprising R7, R8, and R9. The output of Q2 is filtered by a 65-MHz filter consisting of C13 through C16 and L9 through L11 and passed through a 3-dB attenuator comprising R16, R17, and R18. This signal becomes the 65-MHz input to 10 kHz BCD board A4A11.

4-59. 64/65 MHz SWITCHES A4A7 THROUGH A4A10. (See Figures 4-25 and 4-27.)

4-60. The 64/65 MHz switches (A4A7, A4A8, A4A9, and A4A10) select 64 or 65 MHz for each of the higher order BCD boards A4A1, A4A2, A4A3, and A4A4, respectively. The input level is about 200 mV rms (0 dBm into 50 ohms). The logic input at E3 is a TTL compatible level where a "high" level selects the "B" input at E2 and a "low" level selects the "A" input at E1. When a "low" level is applied at E3, Q7 goes on and

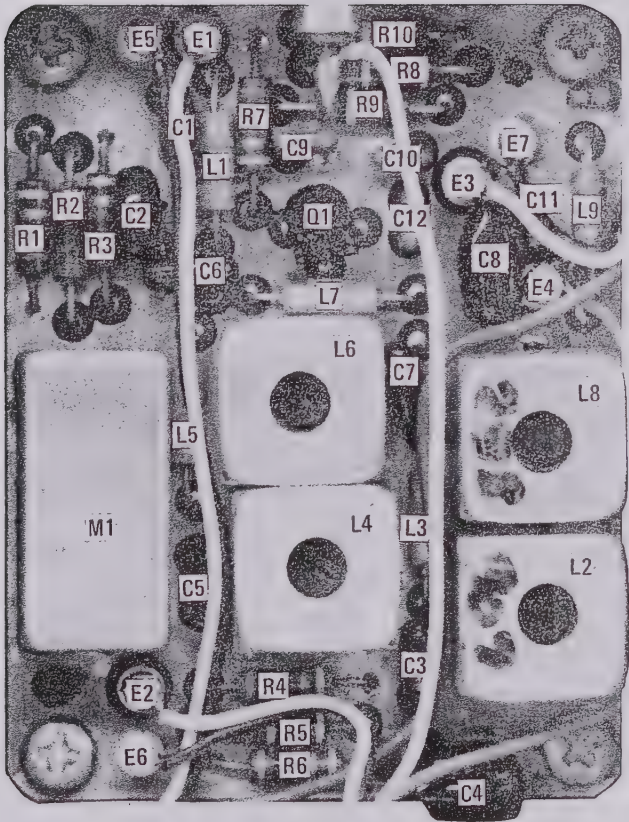


Figure 4-22. BCD-8-1 Board A4A4 Component Locations

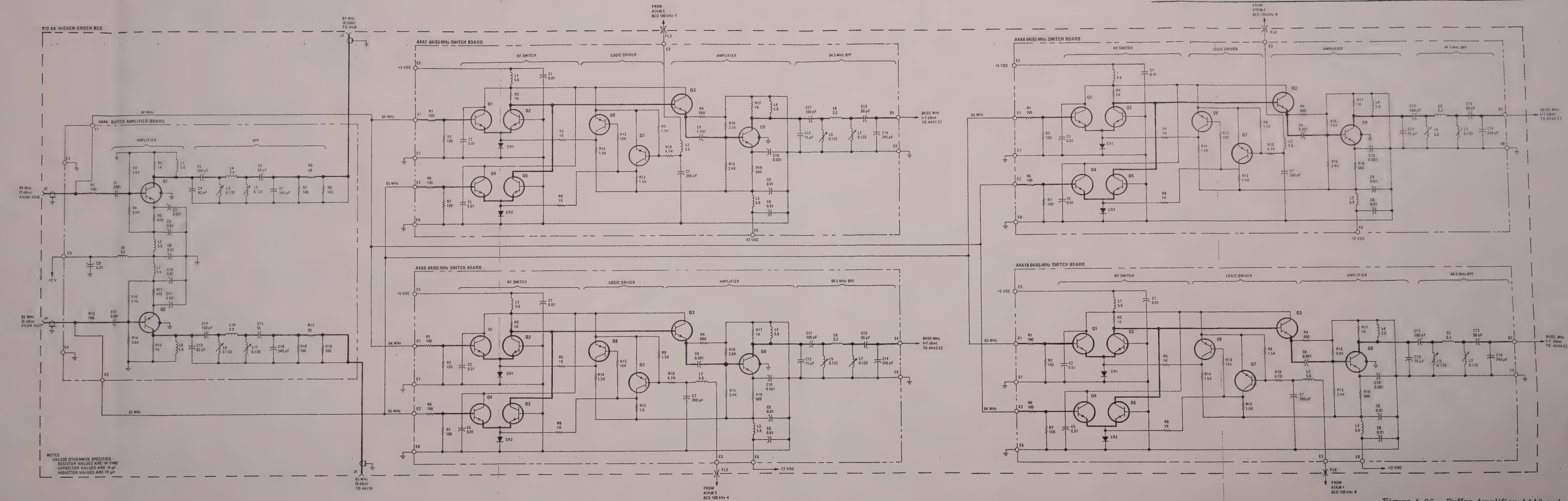


Figure 4-25. Buffer Amplifier A4A6 and
64/65 MHz Switches A4A7-A4A10,
Schematic Diagram

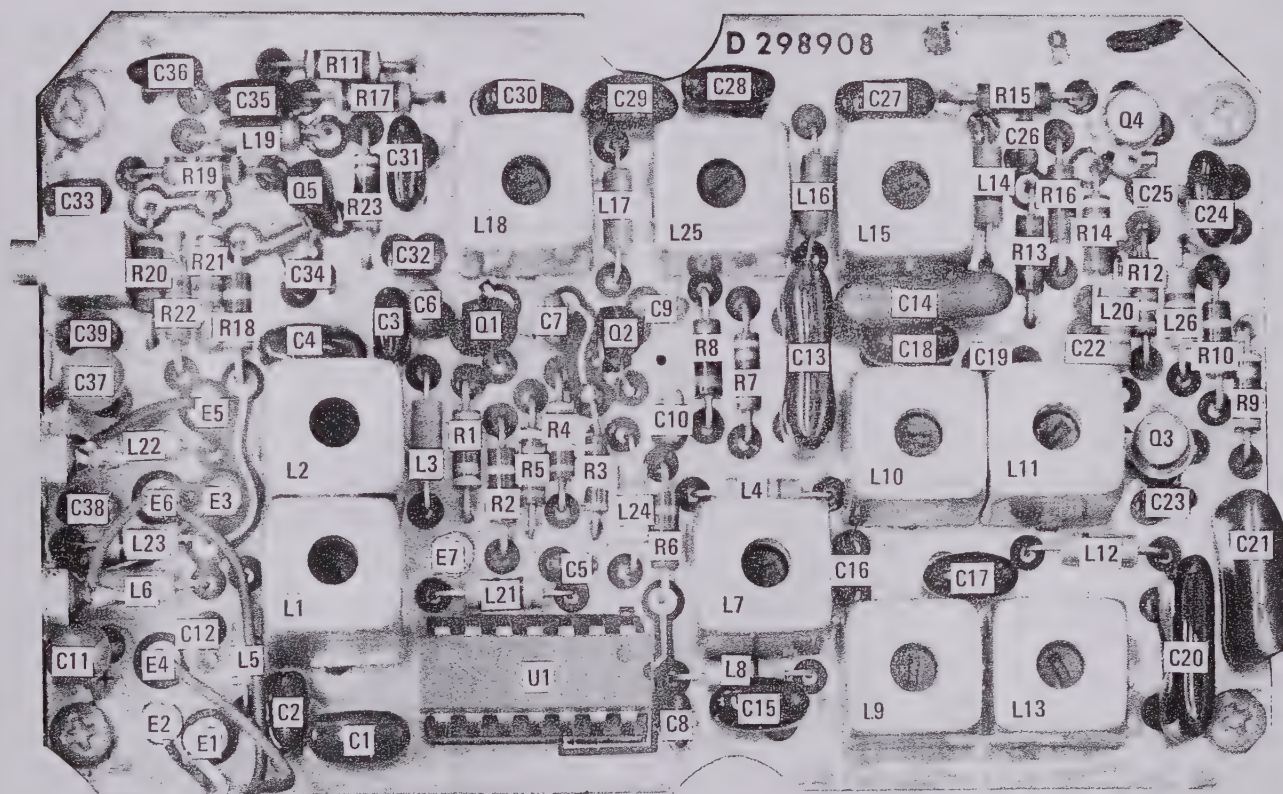
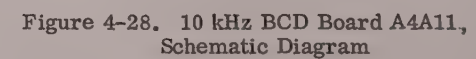


Figure 4-24. BCD-8-2 Board A4A5, Component Locations



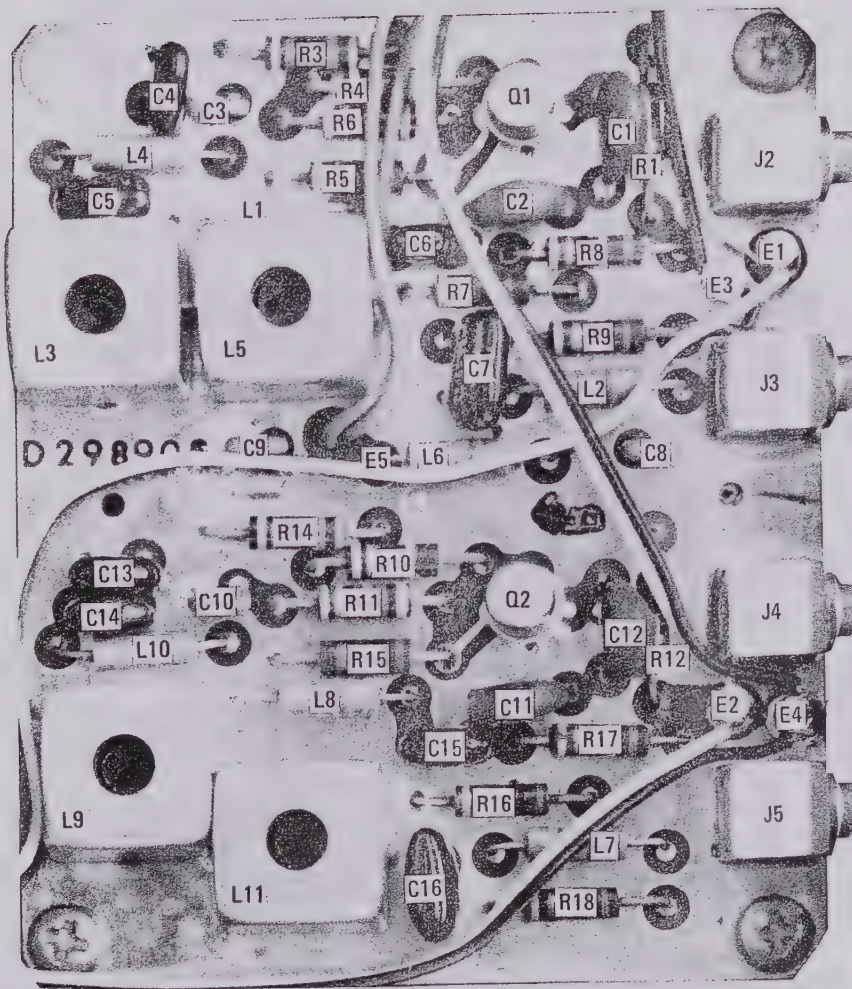


Figure 4-26. Buffer Amplifier A4A6, Component Locations

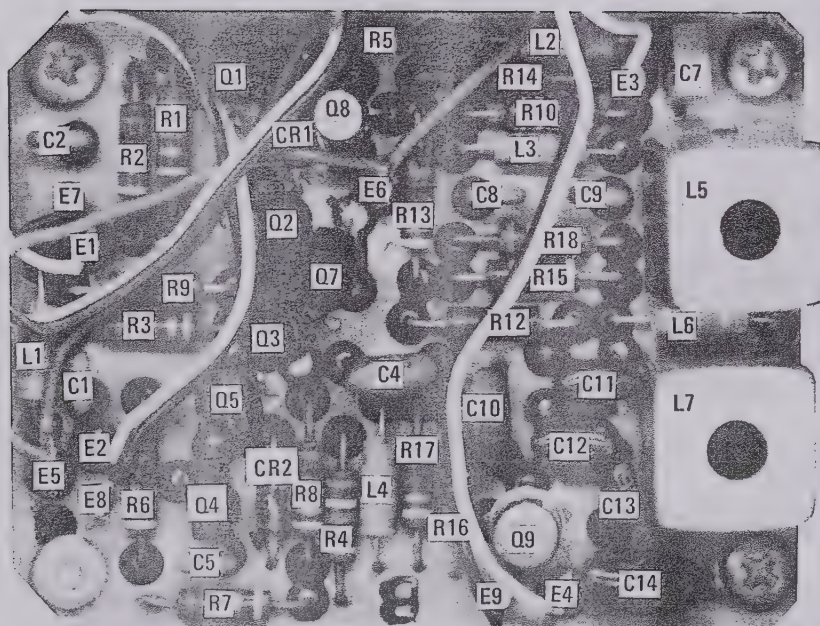


Figure 4-27. 64/65 MHz Switches A4A7-A4A10 Component Locations

turns Q8 off. With Q7 on, CR2 is forward biased and Q4 and Q5 are reversed biased thereby isolating the "B" input at E2. With Q8 off, CR1 is biased off and Q1 and Q2 are biased on. Q1 and Q2 amplify the "A" input and apply it to buffer amplifier Q3. The signal from Q3 is further amplified in Q9 and passed through a 64- to 65-MHz band-pass filter consisting of C11 through C14, and L5 through L7. The output of this filter is at a level of +7 dBm and drives the LO input to the mixer. When a "high" level is applied at E3, Q7 goes off and turns Q8 on. With Q8 on, CR1 is biased on, and Q1 and Q2 are biased off thereby isolating the "A" input at E1. With Q7 off, Q4 and Q5 are biased on and CR2 is biased off thereby amplifying the "B" input and connecting it to the buffer Q3 as described above.

4-61. 10 KHz BCD BOARD A4A11. (See Figures 4-28 and 4-29.)

4-62. The input to 10 KHz BCD board A4A11 is a 35- to 36-MHz signal at -5 dBm, from lower order BCD assembly A2. This signal is mixed in the BCD-1 mixer with 64 or 65 MHz as selected by the BCD-1 switch (Q5 through Q11 and Q1). The level out of all the switches measured at the mixer LO input is +7 dBm nominal. The 28 to 30 MHz band-pass filter consisting of L3, L4, C4, C5, and C6 selects the lower sideband of the BCD-1 mixer. This signal is amplified by driver Q2 to a level of 2V peak-to-peak centered at +1.2 V and is applied to U1 pin 13. U1 is a frequency divide-by-2 circuit which has an output of 14 to 15 MHz at 2.5 V peak-to-peak. This signal is filtered by a 14 to 15 MHz band-pass filter consisting of L6, L7, C8, C9, and C10 and applied to the RF input of the BCD-2 mixer.

4-63. BCD-2 mixer M2 mixes the 14- to 15-MHz signal with 64 or 65 MHz from the BCD-2 switch which consists of Q3, and Q12 through Q18. The lower sideband, or difference frequency, is selected by a 49 to 51 MHz band-pass filter consisting of L10, L11, C12, C15, and C16. This filtered signal is amplified by driver Q4 to a level of 1.6V peak-to-peak centered on 1.2V and applied to flip-flop U2 which functions as a frequency divide-by-2 circuit. The output of U2 is 24.5 to 25.5 MHz which is filtered by the band-pass filter formed by C19, C20, C21, L13, and L14.

4-64. BCD-4 mixer M3 heterodynes this signal, which is at a level of 0.6V peak-to-peak, with the output of the BCD-4 switch consisting of Q24 through Q30 and Q19. The lower sideband of the 38.5 to 40.5 MHz, is selected by the band-pass filter formed by C32, C34, C35, L21 and L22. This signal is amplified by transistor driver Q20 and applied to U3 at a level of 2V peak-to-peak centered at 1.1V. Flip-flop U3 functions as a frequency divide-by-two circuit. The output of this circuit is filtered by the 19.25 to



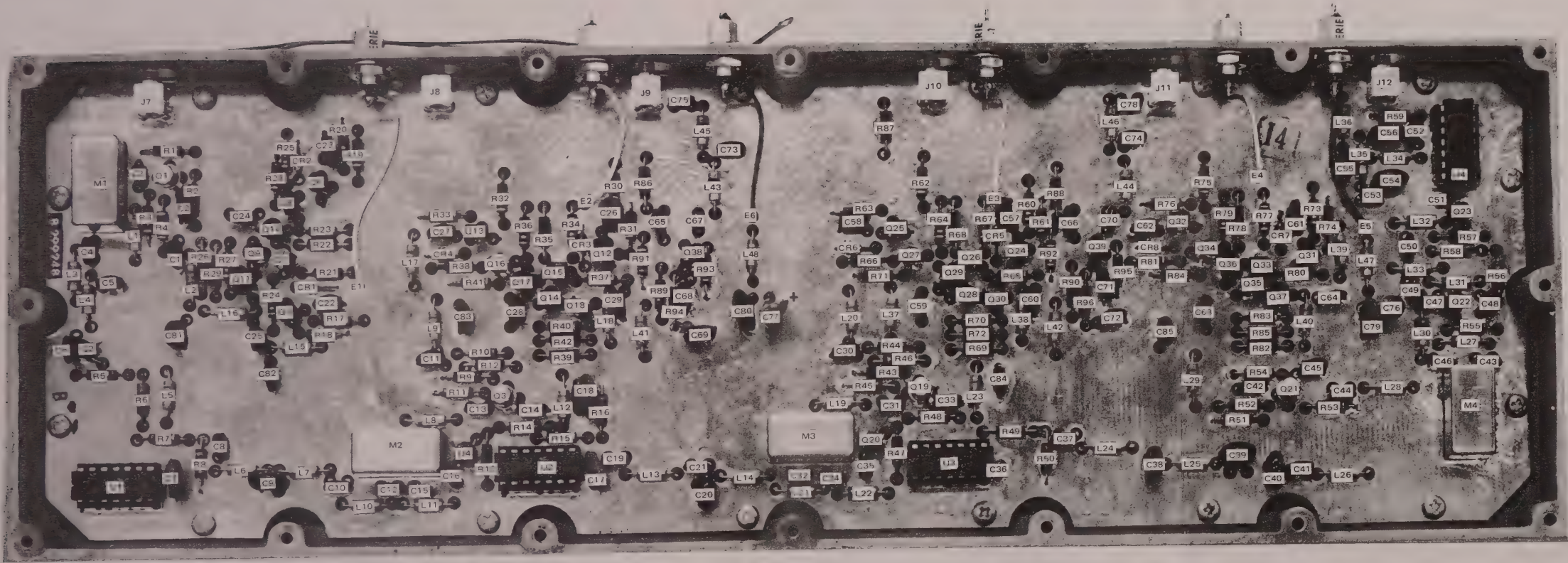


Figure 4-29. 10 kHz BCD Board A4A11, Component Locations

20.25 MHz band-pass filter formed by C37 through C41, L24, L25, and L26. This signal is applied to the BCD-8 mixer at a level of 0.4V peak-to-peak.

4-65. BCD-8 mixer M4 mixes the 19.25 to 20.25 MHz signal with the output of the BCD-8 switch which consists of Q31 through Q37 and Q21. The output of M4 is filtered by C43, C46, C47, L27, and L30 which selects the lower sideband, 43.75 to 45.0 MHz. This signal is amplified in Q22 and filtered by an identical filter C48, C49, C50, L31, and L32 for more rejection. The filtered signal is amplified by transistor driver Q23 and applied to U4 at a level of 1.6V peak-to-peak centered at 1V. U4 is a decade counter connected as a frequency divide-by-five circuit. Due to the fast rise times on the output of U4, the output signal is rich in harmonics. The fourth harmonic is selected by a 35 to 36 MHz filter consisting of C52 through C56, L34, L35, and L36. The output of this filter is the output of the board at a level of -5 dBm.

4-66. The 64- and 65-MHz inputs for the switches come from A4A6. In addition to being applied to the switches, these inputs are applied to buffer amplifiers and band-pass filters to isolate the lower order BCD assembly from the 10-kHz output. The 64-MHz buffer amplifier is Q38 and the filter is L43, L45, C67, C73, and C75. The 65-MHz buffer amplifier is Q39 and the filter is C70, C74, C78, L44 and L46. The output of both of these amplifiers is at 0 dBm.

4-67. FIXED FREQUENCY GENERATOR A5.

4-68. The fixed frequency generator (Figure 4-30) produces all the fixed reference frequencies required by the frequency synthesizer. The output frequencies are 10, 60, 64, 65, and 35 or 35.5 MHz. All of these signals are derived directly from the 5- or 10-MHz input by simple operations of multiplication, division, addition, and subtraction.

4-69. FIXED FREQUENCY INPUT BOARD A5A1. (See Figures 4-31 and 4-32.)

4-70. The input to this board is from the REF IN connector at the rear panel of the frequency synthesizer. The input signal is 5 or 10 MHz at a level of 0 dBm minimum. This signal goes through saturated amplifier Q1 which limits the 10 MHz or produces harmonics of 5 MHz. C4, L1, C6, L2, and C7 form a 10 MHz band-pass filter which selects the correct harmonic (10 MHz) of the input signal. The 10-MHz signal is further amplified by Q2 and filtered by 4-pole band-pass filter L3, L5, L6, and L8. The output of this filter is amplified again and passed through crystal filter Y1 which reduces excess noise on the reference by 20 dB for noise sidebands greater than 500 Hz away from the carrier. The output of this board is 0 dBm into 50 ohms. The 10-MHz signal drives all the other units in the fixed frequency generator.

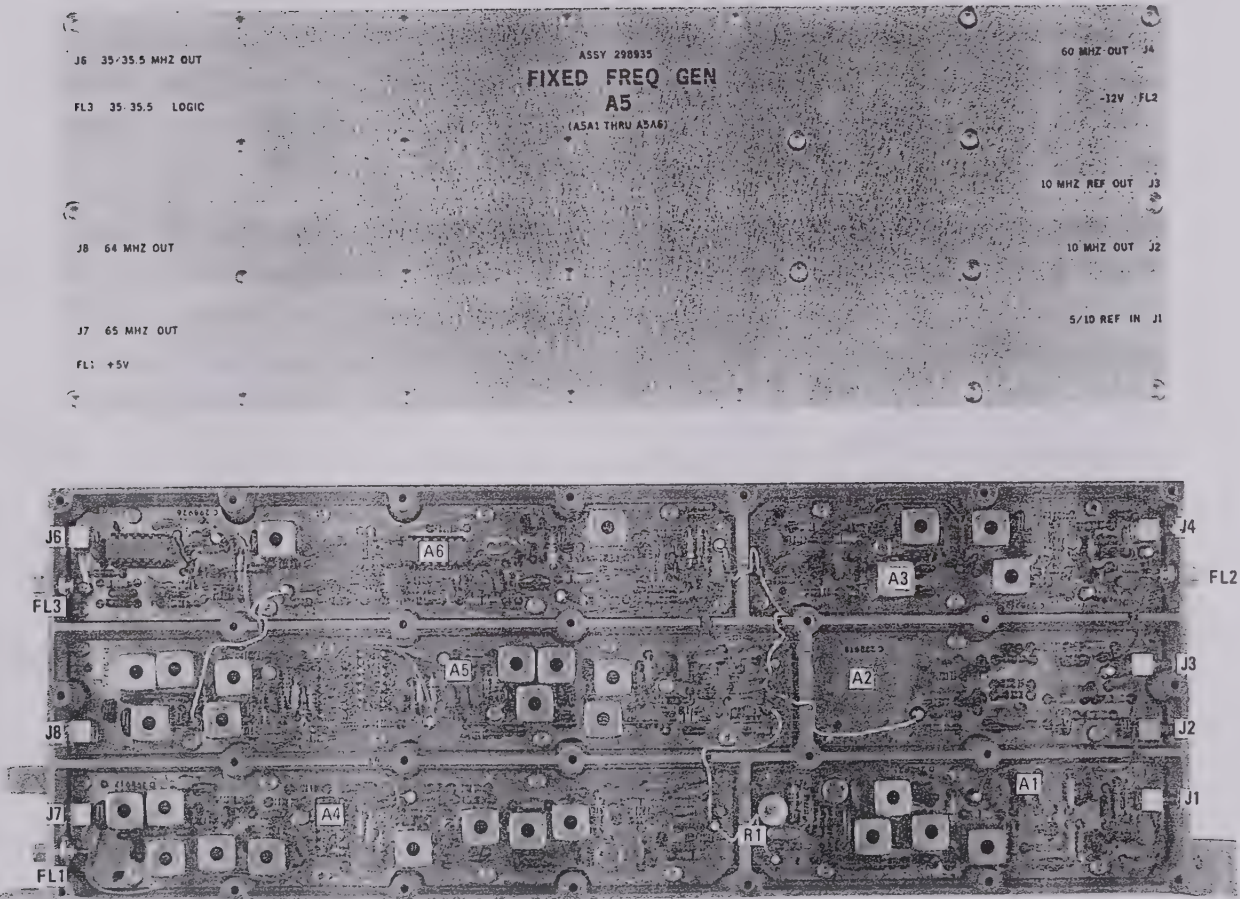


Figure 4-30. Fixed Frequency Generator Assembly A5

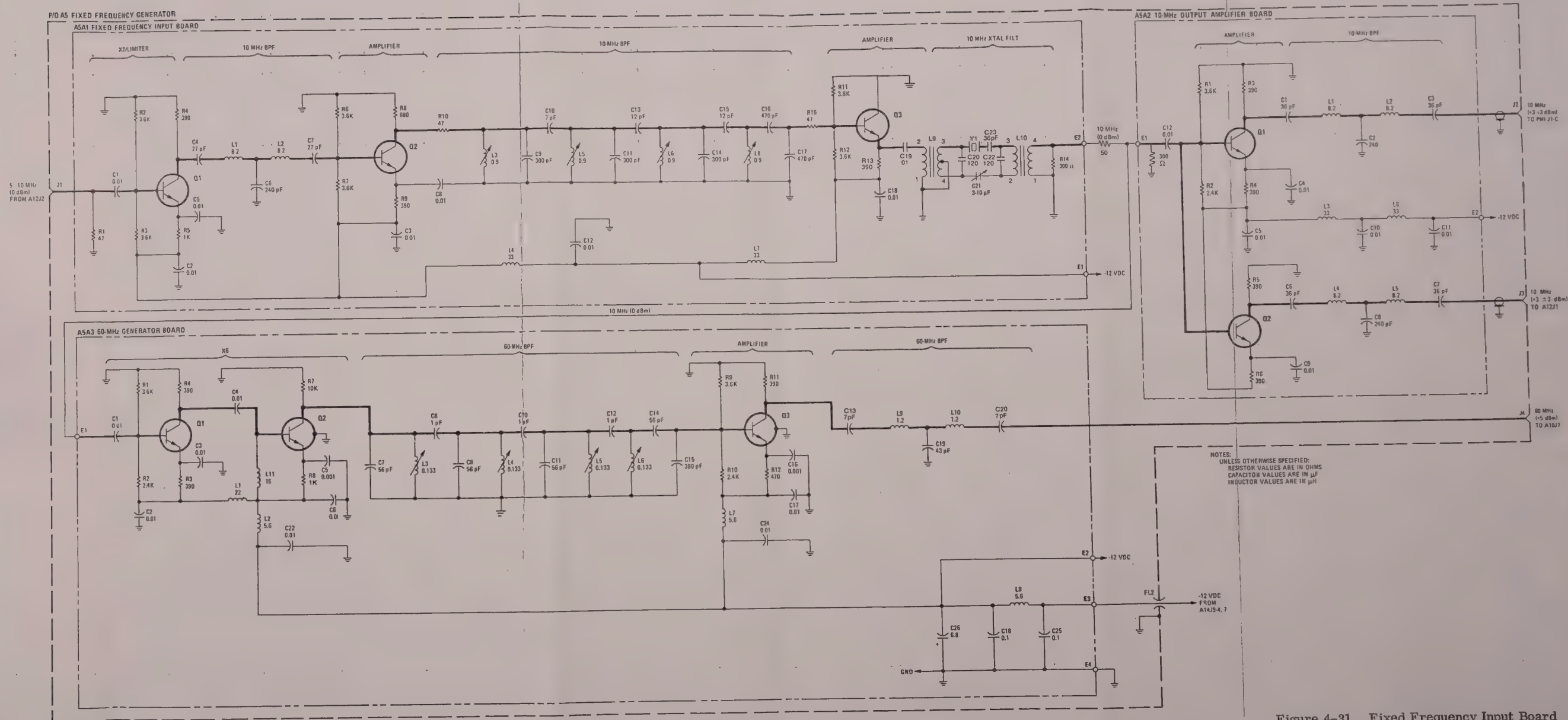


Figure 4-31. Fixed Frequency Input Board
 A5A1, 10 MHz Output Amplifier A5A2,
 and 60 MHz Generator, A5A3,
 Schematic Diagram

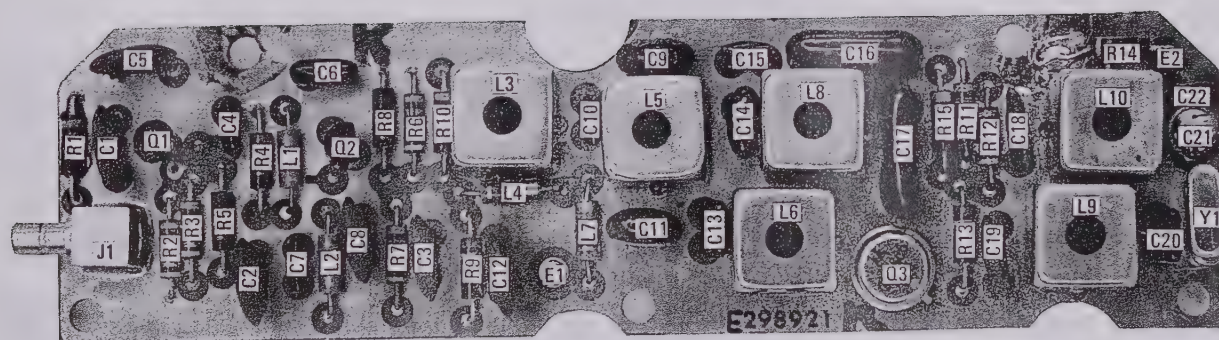


Figure 4-32. Fixed Frequency Input Board A5A1, Component Locations

4-71. 10 MHz OUTPUT AMPLIFIER A5A2. (See Figures 4-31 and 4-33.)

4-72. This printed circuit board buffers the 10-MHz signal. One buffered output at A5J2 provides 10 MHz at +3 dBm for the RF plug-in unit. The other output at A5J3 provides a 10-MHz reference output at +3 dBm at the rear panel of the frequency synthesizer. The board consists of two amplifiers, Q1 and Q2, and two, 10-MHz band-pass filters: L1, L2, C1, C2, and C3; and L4, L5, C6, C7, and C8.

4-73. 60 MHz GENERATOR A5A3. (See Figures 4-31 and 4-34.)

4-74. The 60 MHz generator provides a 60-MHz output at +5 dBm. The 10-MHz signal from fixed frequency Input Board A5A1 is amplified by Q1. Transistor Q2 is a saturated amplifier stage followed by 60-MHz, four-pole band-pass filter L3 through L6. The combination of the saturated amplifier and band-pass filter form a X6 multiplier. The output of the band-pass filter is a 60-MHz signal which is amplified by Q3 and filtered by 60-MHz band-pass filter L9, L10, C13, C19, and C20. The output of A5A3 is a +5 dBm signal at 60 MHz for use in the frequency extender module.

4-75. 65 MHz GENERATOR A5A4. (See Figures 4-35 and 4-36.)

4-76. The input to the 65 MHz generator is 10 MHz from fixed frequency input board A5A1. This signal is amplified by amplifier Q1. Transistor Q2 is a class C amplifier which produces a 10-MHz signal rich in harmonics. The 13th harmonic, 130 MHz, is selected by four-pole band-pass filter L4 through L7 and C8 through C13 and C15 and C16. The 130-MHz signal is amplified by Q3 which forms a driver stage for U1 - a high speed flip-flop operating as a frequency divide-by-two circuit producing 65 MHz. The 65 MHz is amplified by Q4 and filtered by five-pole band-pass filter L14 through L18 and C24 through C34. The 65-MHz output at 0 dBm minimum provides one of the reference frequencies required for the BCD section.

4-77. 64 MHz GENERATOR A5A5. (See Figures 4-37 and 4-38.)

4-78. The 64 MHz generator starts with 10 MHz from fixed frequency input board A5A1 and amplifies the 10 MHz in Q1. Transistor Q2 is a saturated amplifier stage which produces harmonics of 10 MHz. The eighth harmonic (80 MHz) is selected by five-pole band-pass filter L5 through L9, C5, and C8 through C16. The output of this filter is 80-MHz signal which is amplified by Q3 (part of a driver for U1 and U2). U1 and U2 are Schottky TTL flip-flops connected to form a frequency divide-by-five circuit. The output at U2 pin 6 is a 16-MHz signal rich in harmonics due to the fast rise times of the Schottky TTL logic. L12, L13, C19, C20, and C21 form a band-pass filter selecting the fourth

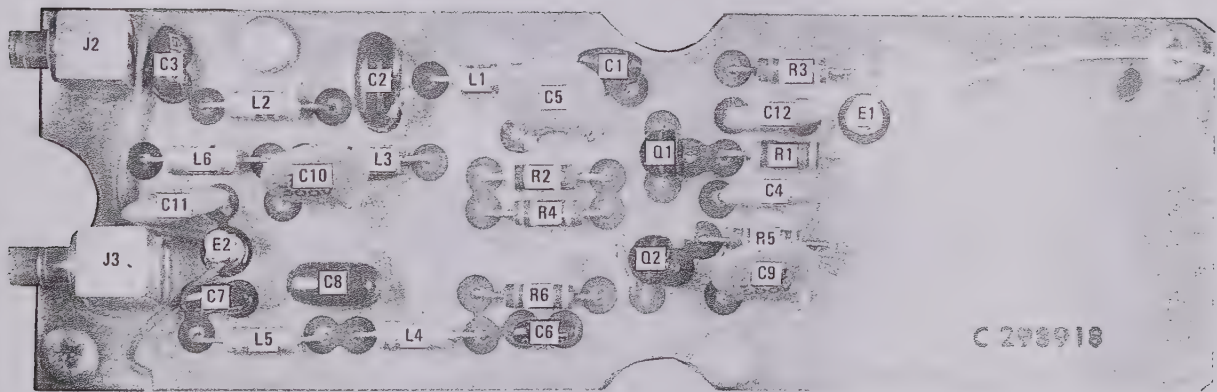


Figure 4-33. 10 MHz Output Amplifier A5A2, Component Locations

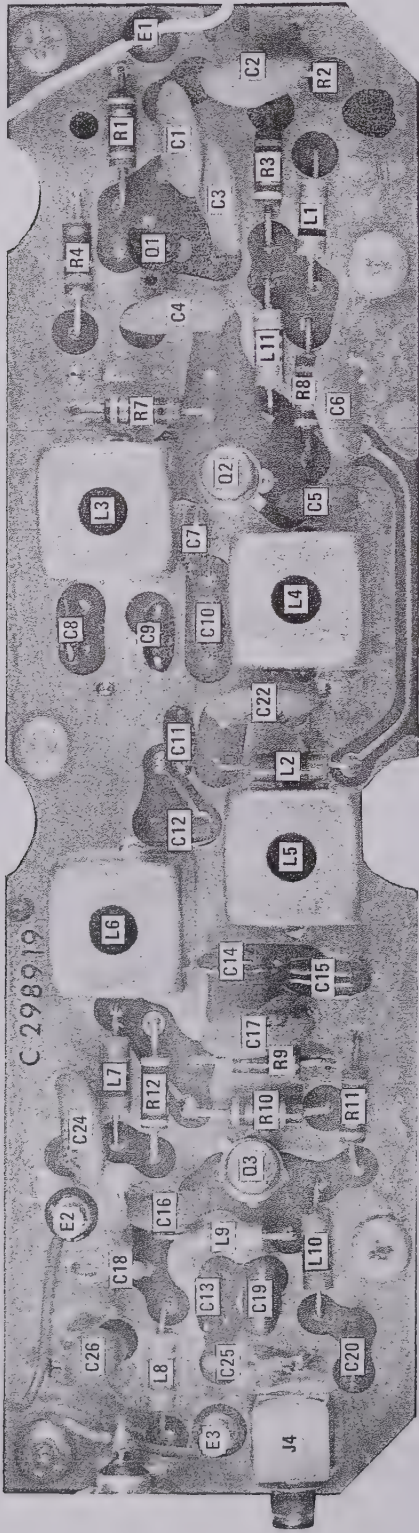


Figure 4-34. 60 MHz Generator A5A3, Component Locations

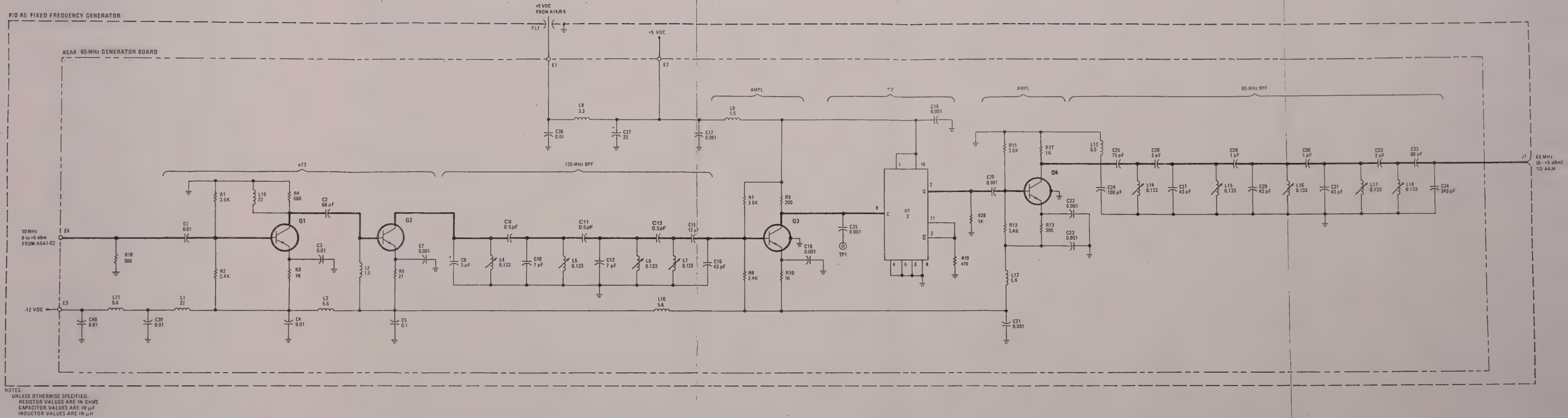


Figure 4-35. 65 MHz Generator A5A4, Schematic Diagram



Figure 4-36. 65 MHz Generator A5A4, Component Locations

Maintenance

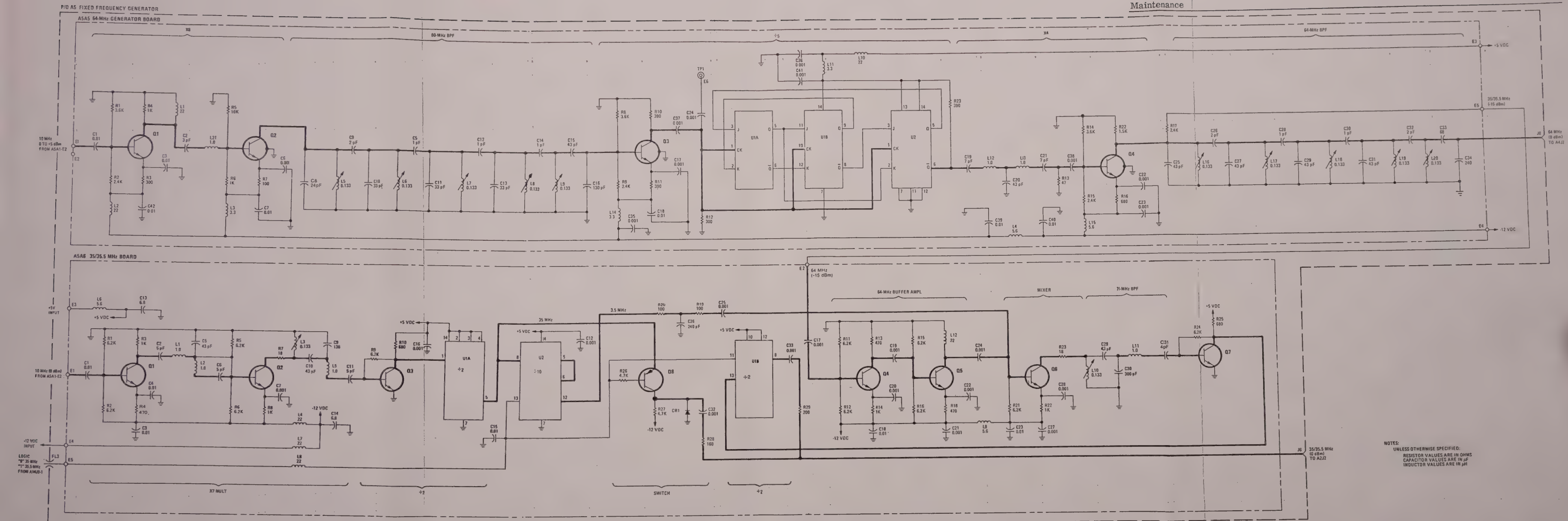


Figure 4-37. 64 MHz Generator A5A5 and 35/35.5 MHz Board A5A6, Schematic Diagram

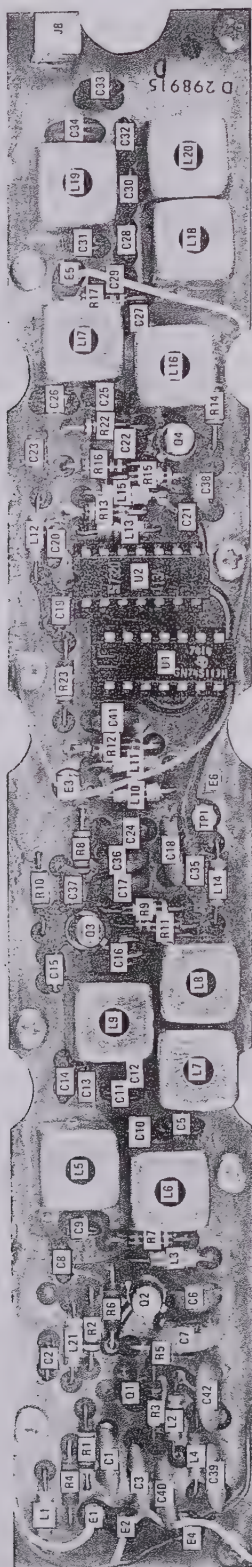


Figure 4-38. 64 MHz Generator A5A5, Component Locations

harmonic (64 MHz) which is amplified by Q4. L16 through L20 and C25 through C34 form a five-pole band-pass filter at 64 MHz which filters out sidebands from the divider. The output of this filter is 64 MHz at 0 dBm minimum which is one of the reference frequencies used in the BCD section.

4-79. 35/35.5 MHz BOARD A5A6. (See Figures 4-37 and 4-39.)

4-80. The third reference frequency required by the BCD section is 35.0 or 35.5 MHz. The output frequency is switched with a TTL compatible command at A5FL3. A logic '0' ($\leq 0.8V$) produces 35.0 MHz and a logic '1' ($\geq 2.2V$) produces 35.5 MHz at the output. With A5FL3 at logic '0', 10 MHz from fixed frequency input board A5A1 is amplified in saturated transistor Q1 which generates a 10-MHz signal rich in harmonics. The seventh harmonic (70 MHz) is selected by the 70-MHz band-pass filter C2, C5, C6, L1, and L2. This 70-MHz signal is amplified by amplifier Q2 and filtered by 70-MHz band-pass filter L3, C9, C10, L5, and C11. The 70-MHz signal is applied to driver stage Q3 which drives U1. U1 is a Schottky TTL flip-flop operating as a frequency divide-by-two circuit producing 35 MHz. The 35 MHz passes through RF switch Q8 and CR1. Q8 is conducting and CR1 is reverse biased so that the 35-MHz signal appears as an output at A5J6. Note that U2 and the second half (U1B) of U1 are inhibited so that no other signals appear at the output.

4-81. To generate 35.5 MHz, 64 MHz from A5A5 is amplified and isolated by amplifier stages Q4 and Q5 so that a buffered 64-MHz signal is applied to the base of Q6. A5FL3 is set at a logic '1' level which enables U2 and both halves of U1. A logic '1' also turns on CR1 and turns off Q8 so that 35 MHz is isolated from the output by more than 20 dB. The 35 MHz present at U1 pin 5 is connected to pin 8 of U2 which is a Schottky BCD counter functioning as a frequency divide-by-ten circuit producing 3.5 MHz at U2 pin 12. This 3.5 MHz signal is applied to the base of Q6 along with the 64-MHz signal causing Q6 to act as a mixer generating sum and difference products of 64 MHz and 3.5 MHz and its harmonics. The 71-MHz product is selected by 71-MHz band-pass filter L10, L11, C29, C30, and C31. This 71-MHz signal is amplified by driver Q7 and applied to U1 pin 13. U1 is a frequency divide-by-two circuit generating the required 35.5 MHz. The output of A5A6 is -5 dBm and all sidebands, not harmonically related, are 20 dB below the carrier. The output signal provides the input reference for the lower order BCD assembly.

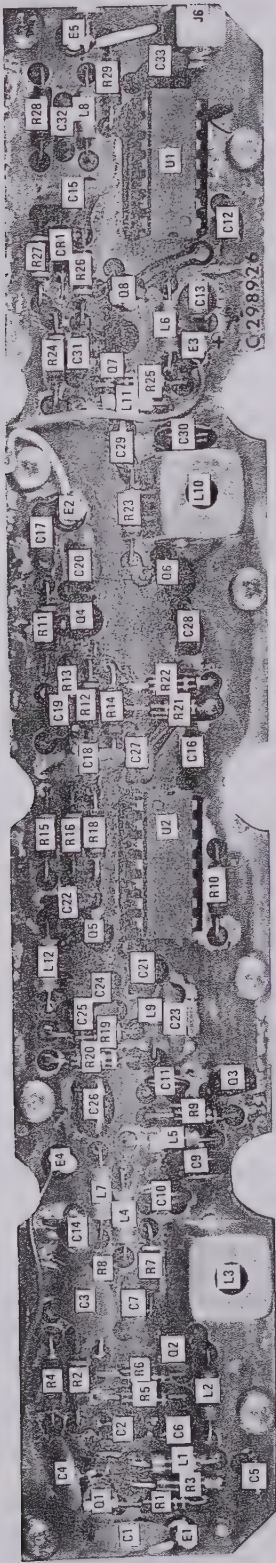


Figure 4-39. 35/35.5 MHz Board A5A6, Component Locations

4-82. POWER SUPPLY A11

4-83. The power supply is a series-regulated, constant-voltage, low-noise supply. It has dual outputs of +5.2 Vdc at 5 amps and -12 Vdc at 4.5 amps. The power supply consists of four sections: most of rear panel assembly A12, part of front panel assembly A1, filter/regulator boards A11A1 through A11A3, and part of logic and power distribution board A14. The following paragraph describe each of the sections that make up the power supply.

4-84. REAR PANEL ASSEMBLY A12. (See Figures 4-40 and 4-41.)

4-85. The input line voltage passes through a line filter, fuse F1* and into 115/230 volt switch S1. Switch S1 is a 4PDT switch with two poles used to switch the 115/230 volt inputs to the power transformer and the other two poles used to switch the 115/230 volt inputs to the fan and the plug-in section.

NOTE

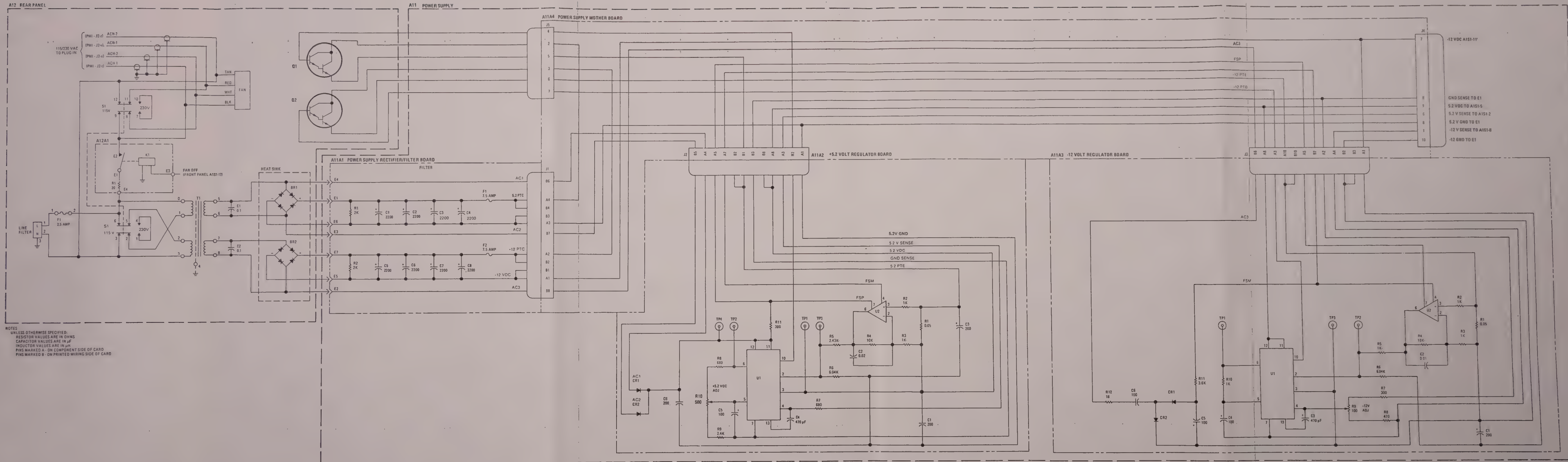
The 115/230 Vac input to the plug-in section is required for plug-ins that need supply voltages other than +5.2 and -12 Vdc.

The hot line connection between the transformer section and the fan section of S1 is passed through a relay on A12A1. When the system is on, the fan off input to this board is floating and the relay contact is in its normally closed position thus applying ac power to the fan and plug-in. When the system is switched to STDBY, -12 Vdc is present on the fan off input, activating the relay and opening the contact which turns off power to the fan and the plug-in. At the output of transformer T1 are two 0.1 μ F Capacitors (C1 and C2) which are needed to suppress transients on the ac lines. The transformer outputs are wired to two full-wave bridge rectifiers (BR1 and BR2) mounted on a heat sink on the rear panel. The outputs of the bridge rectifiers and three of the four outputs from the transformer are then wired to filter board A11A1. The only other power supply components mounted on the rear panel are Darlington pair pass transistor Q1 and Q2 which are also mounted on a heat sink.

4-86. FILTER/REGULATOR ASSEMBLY A11. (See Figure 4-40.)

4-87. The filter regulator assembly consists of four PC boards: filter board A11A1, +5.2 V regulator A11A2, -12 V regulator A11A3, and motherboard A11A4. The motherboard (Figure 4-42) provides all the interconnections between the other three PC boards, rear panel assembly A12 and, logic and power distribution board A14.

*F1 should be 2.5A for 115V and 1.5A for 230V operation.



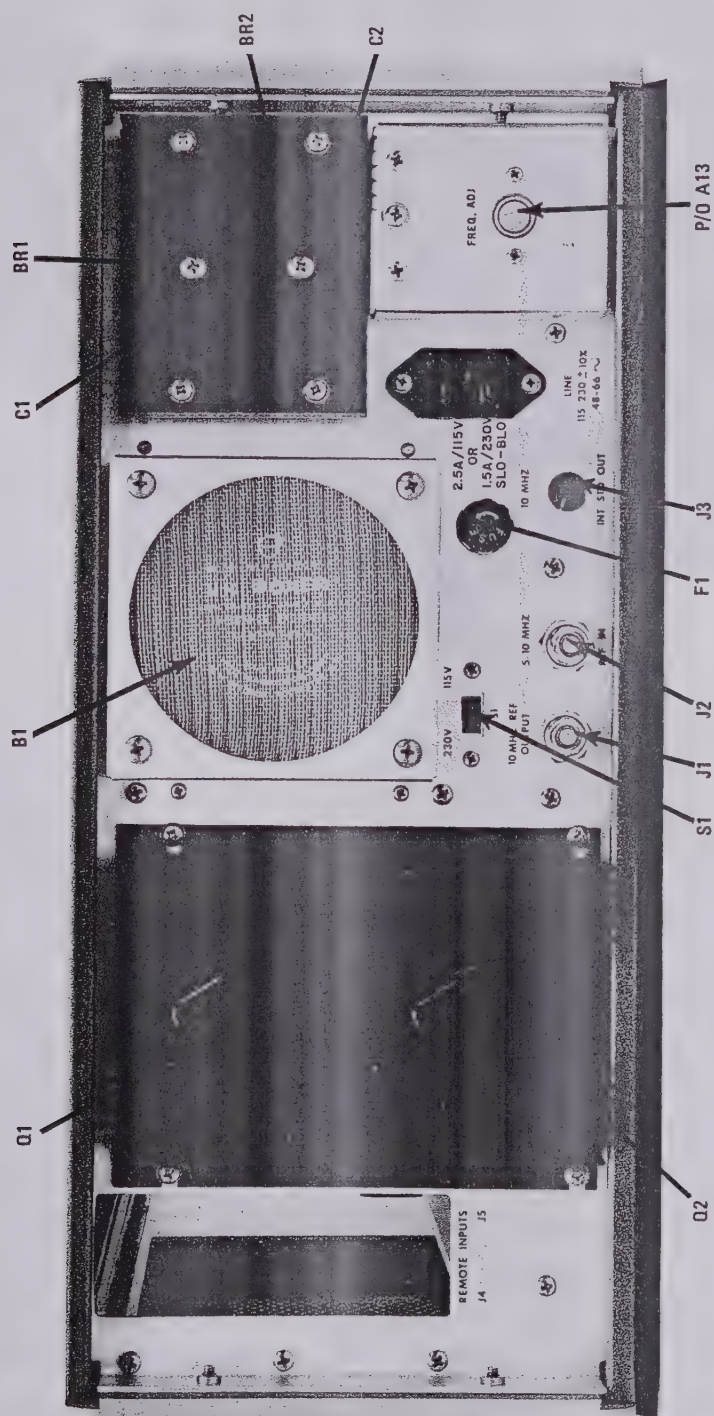


Figure 4-41. Rear Panel Assembly A12 Component Locations

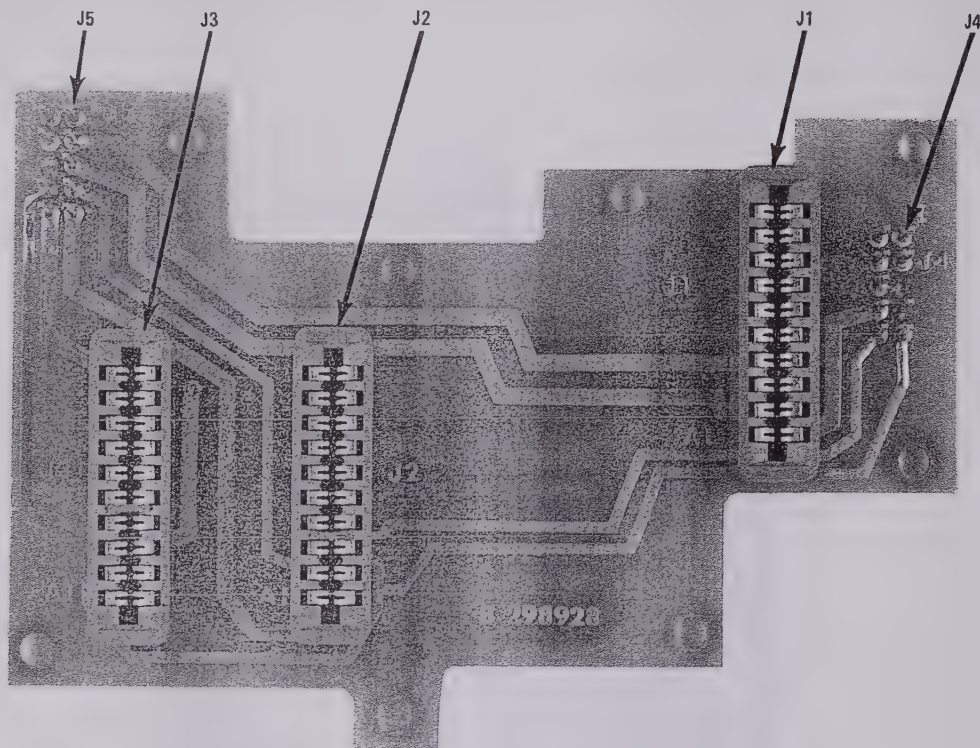


Figure 4-42. Power Supply Mother Board A11A4

4-88. FILTER BOARD A11A1.

4-89. Filter board A11A1 (Figure 4-43) has seven individually removable inputs (E1 through E7) coming from bridge rectifiers BR1 and BR2 and transformer T1. Four of the inputs are connected across filter capacitors. The inputs at E1 and E6 are filtered by capacitors C1 through C4 in parallel and the filtered dc is applied through motherboard A11A4 to the collector of +5.2 V pass transistor A12Q1. The inputs at E7 and E5 are filtered by capacitors C5 through C8 in parallel and the filtered dc is applied through motherboard A11A4 to the collector of -12 V pass transistor A12Q2. Fuse F1 is provided to protect the supply from a catastrophic failure such as the pass transistor shorting where the regulators would not be able to control the current and very high dc currents would flow. Resistors R1 and R2 across the filter capacitors are bleeder resistors which allow the capacitors to discharge when the dc load current path is opened. The other three ac voltage inputs to the filter board are fed through the motherboard to the appropriate regulator board.

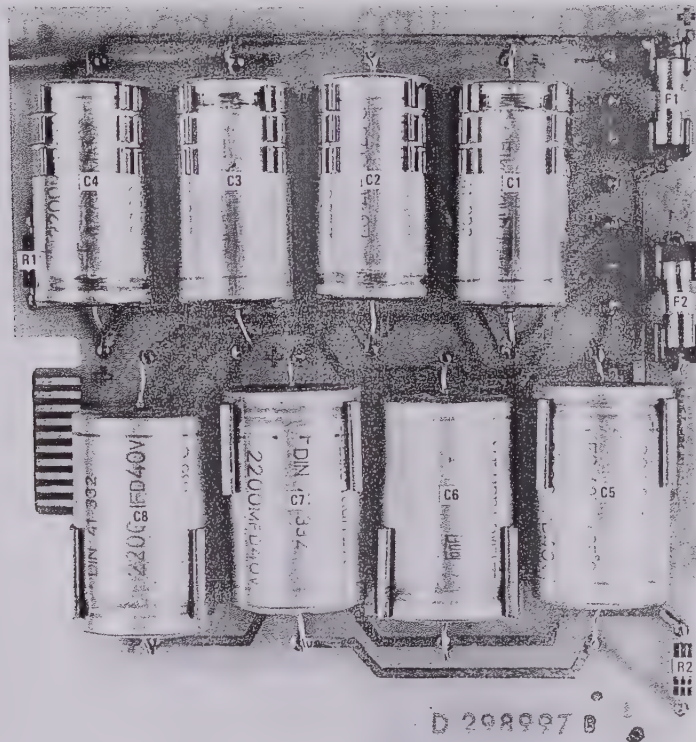


Figure 4-43. Filter Board A11A1, Component Locations

4-90. 5.2 V REGULATOR A11A2.

4-91. The 5.2 V regulator (Figure 4-44) is basically an IC regulator driving a pass transistor (A12Q1) to boost current output capability. The regulators feature foldback current limiting and overvoltage protection. On the 5.2 V regulator, inputs AC1 and AC2 are rectified and filtered by CR1, CR2, and C6 providing the dc bias for U1. This input must be at least 3 volts greater than the output of pin 10. The output of U1 (pin 10), 5.2 PTB, drives the base of Darlington pass transistor A12Q1 while the emitter is returned to the regulator board where the dc load current passes through .05 ohm resistor R1 and is then brought out to the front panel assembly through connector J4 on the motherboard. Three other outputs from this board are 5.2 GND, 5.2 V SENSE, and GND SENSE which are also brought out to J4 on the motherboard.

4-92. The 5.2 V SENSE line is connected through R7 to pin 4 of U1 which is the inverting input to a differential amplifier inside U1. This is balanced against a reference input into pin 5 which is the noninverting input. The reference output of U1 (pin 6) is 7.15 volts which is divided down by R8, R9, and R10. R10 is the voltage adjust potentiometer which allows

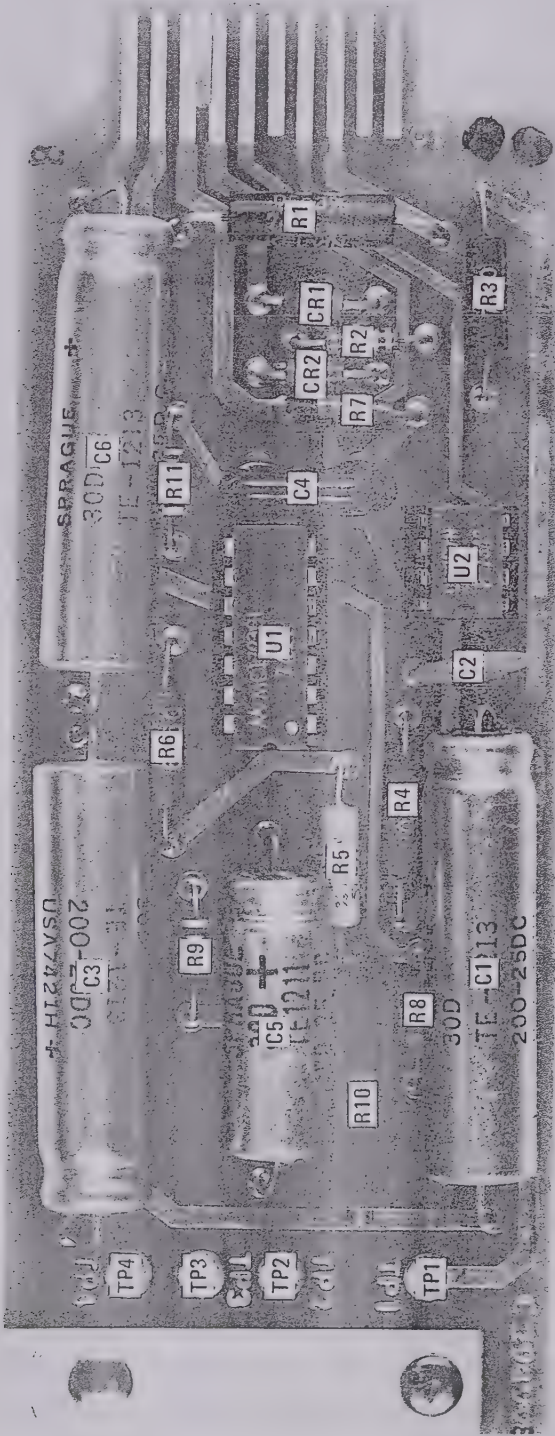


Figure 4-44. 5.2 Volt Regulator A11A2, Component Locations

the reference input at pin 5 to be adjusted to +5.2 volts. Capacitor C5 is used to reduce the noise and ripple voltage on the regulated dc output. Capacitor C4 assures frequency stability of U1.

4-93. An important feature of this regulator is foldback current limiting which is provided by R1 through R6, C2, and U2. The voltage drop across R1 is amplified by U2 and applied through a voltage divider to pin 2 of U1. The voltage at pin 2 of U1 is now directly dependent on the voltage drop across R1 which depends on the load current. When the load current reaches 5.5 amp (0.5 amp above rated load), the voltage at pin 2 of U1 is approximately 0.7 volts greater than that at pin 3 of U1, which turns on an internal transistor. The transistor reduces the voltage and current drive capability of U1. As a result, the voltage and current outputs of the regulator start to drop. U2 requires two supplies, positive and negative. The positive supply comes from the voltage input to U1 through dropping resistor R11 to keep the supply voltage below the rated limit of U1. This voltage is also used to power U2 on the -12 V regulator and is therefore, an output from the 5.2 V regulator (foldback supply positive, FSP). The negative supply is generated on the -12 regulator board and is an input to this board (foldback supply minus, FSM).

4-94. -12 V REGULATOR A11A3.

4-95. The -12 V regulator (Figure 4-45) is basically the same design as the 5.2 V regulator so only the differences will be described. Basically it is still a positive output regulator design where the positive end is grounded and the negative end is taken as the -12 volt output. Since the desired output of 12 volts is greater than the internal reference of 7.15 volts, the voltage divider adjust resistors (R7, R8, and R9) are wired to the inverting input of U1 (pin 4), where the adjustment is now made to place a voltage of +7.15 volts with respect to the -12 volt output (or -4.85 volts with respect to ground) on pin 4. Pin 4 is balanced against the internal reference of 7.15 volts which is connected to pin 5 from pin 6 of U1 through R10. An ac input (AC3) from the transistor is wired to R12, C5, C6, CR1 and CR2 to create the negative supply voltage for U2 on both regulator boards. All other component functions are identical to the 5.2 V regulator.

4-96. LOGIC AND POWER DISTRIBUTION A14. (See Figures 4-46 and 4-47.)

4-97. The voltage output and sense wires for the -12 V and +5.2 V regulators are connected at the input to line switch A1S1. The output of the switch is then wired to the logic and power distribution board A14 where they are distributed to the appropriate connectors which carry power to the different sections of the system. In addition, the fan off signal comes from the line switch and is wired such that it is floating when the system is on and

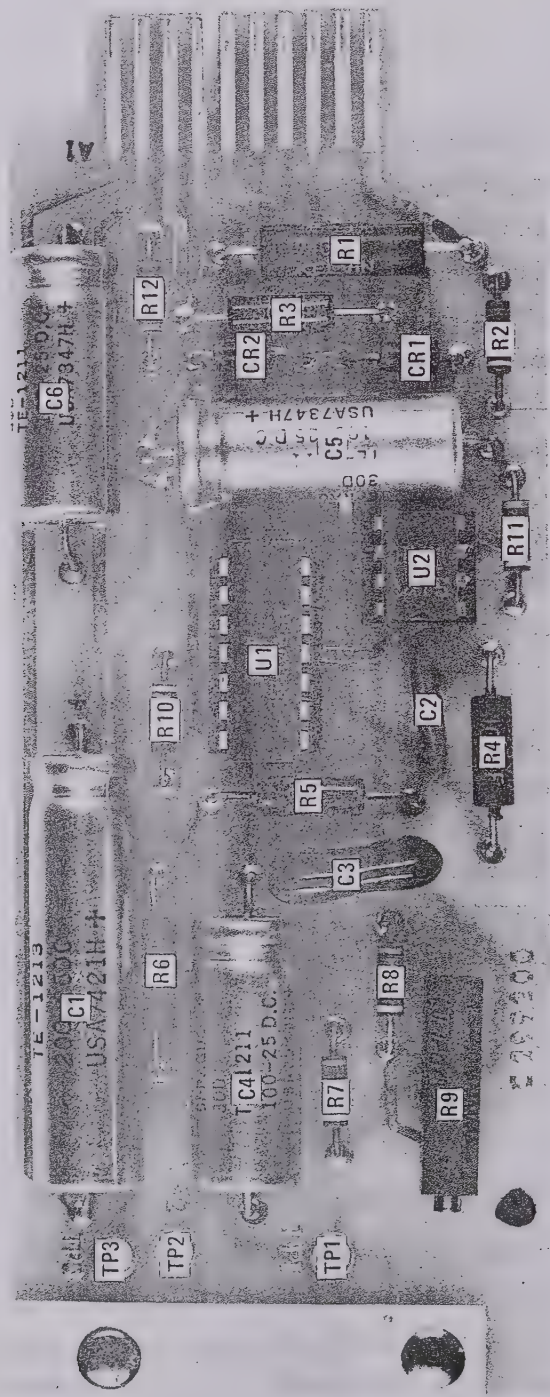


Figure 4-45. -12 Volt Regulator A11A3, Component Locations

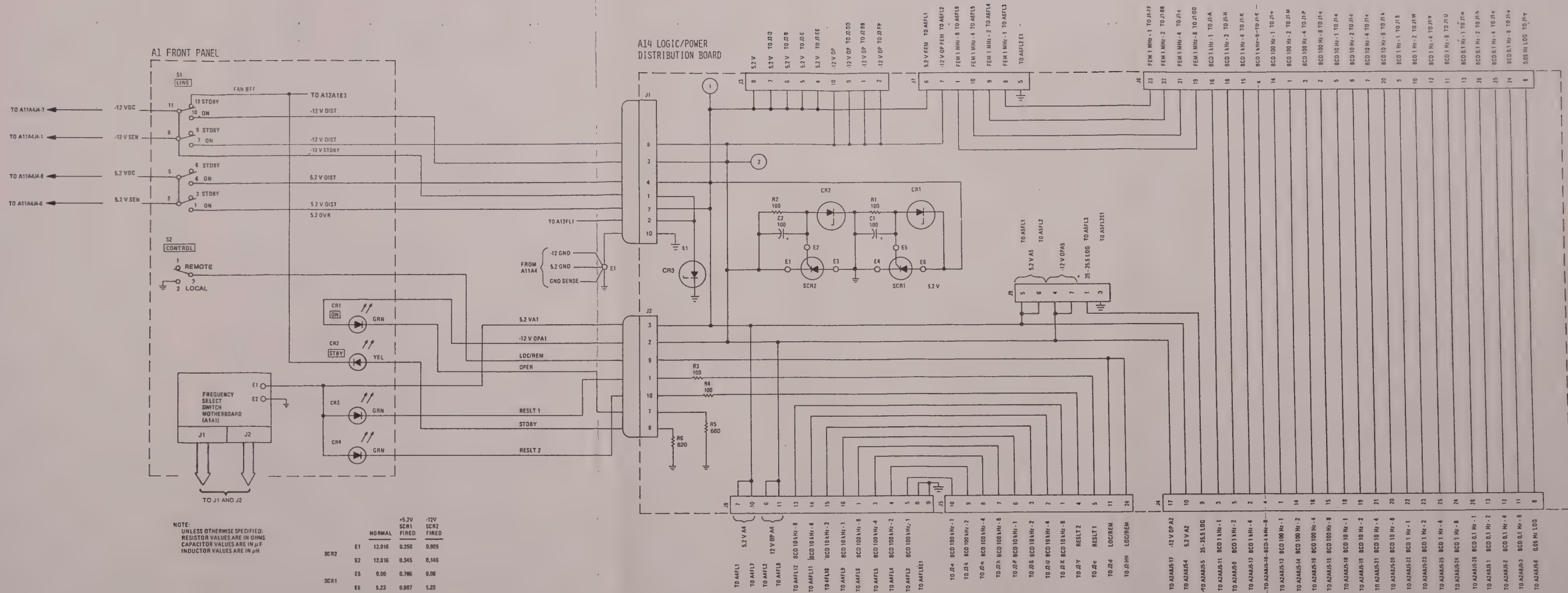


Figure 4-46. Logic and Power Distribution Board A14, Schematic Diagram

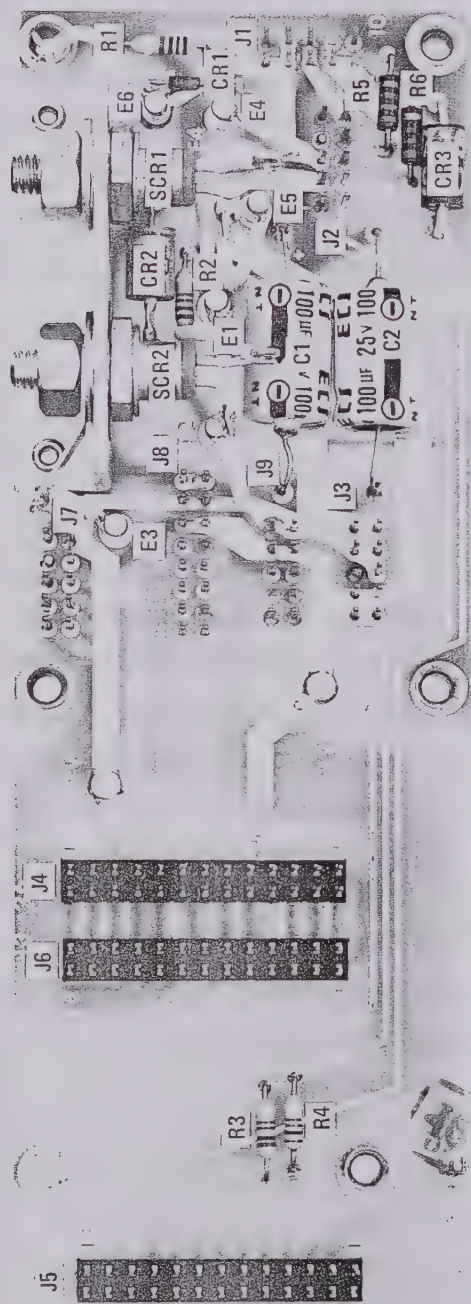


Figure 4-47. Logic and Power Distribution Board A14, Component Locations

is wired to -12 V when the system is in standby. Another function of this board is to provide overvoltage protection for the system. The +5.2 volt overvoltage circuit consists of CR1 and SCR1. If the 5.2 V exceeds 7 volts, SCR1 fires shorting the 5.2 V to ground. Similarly CR2 and SCR2 protect the -12 V for voltages exceeding -15 volts. These circuits are used only in the POWER ON mode. In STDBY it is necessary to protect the -12 volts. This is accomplished by diode CR3. If an SCR does fire due to an overvoltage condition, ac power must be removed from the unit. If the overvoltage condition has been eliminated, power may be reapplied to restore dc power. The ground return wires for +5.2 and -12 volts and the ground sense wire are each brought out and wired to the single point chassis ground.

4-98. 24/33 MHz OSCILLATOR A6. (See Figures 4-48 and 4-49.)

4-99. The 24/33 MHz oscillator generates ten discrete frequencies in 1-MHz steps controlled by the frequency extender module logic. Two isolated outputs are provided.

4-100. 24-33 MHz OSCILLATOR A6A1. (See Figures 4-48 and 4-50.)

4-101. This board generates ten discrete frequencies from 24 to 33 MHz in 1-MHz increments. The board contains logic decoder U1, ten oscillators, and divide-by-three circuit U2. The oscillators operate from 72 to 99 MHz in 3-MHz increments so that after the divide-by-three circuit they produce the required 24-33 MHz. The logic decoder is a BCD-to-decimal decoder. The output frequency is given for each input BCD code in Table 4-3.

4-102. Each of the ten oscillators are identical, therefore, only one is described. When the four logic inputs are in a "low" state (0000 programmed), pin 1 of U1 is "low". When pin 1 is low, PNP transistor Q10 goes on raising the collector to approximately 4.5V. This turns on 72-MHz NPN oscillator Q9, which is a Colpitts oscillator with the resonant circuit formed by C17, C18, and C19 resonating with L10. The output of the oscillator is formed by common coupling line L9 coupling energy from resonating inductor L10.

4-103. If another BCD code appears at the input, for example, a 1001, then pin 1 is high. The collector of Q10 goes to -12 Vdc. This condition provides no bias for Q9 and, therefore, this oscillator is off. However, pin 9 is low turning on Q16 which turns on oscillator Q15. The output of this oscillator also is coupled into the common coupling line L9.

4-104. Coupling line L9 feeds amplifier driver Q21 which boosts the signal level to drive U2. U2 is a dual Schottkey flip-flop wired as a frequency divide-by-three to generate the required 24 to 33 MHz. The output of this board drives the power divider on A6A2. The output level is a 2-volt peak-to-peak square wave.

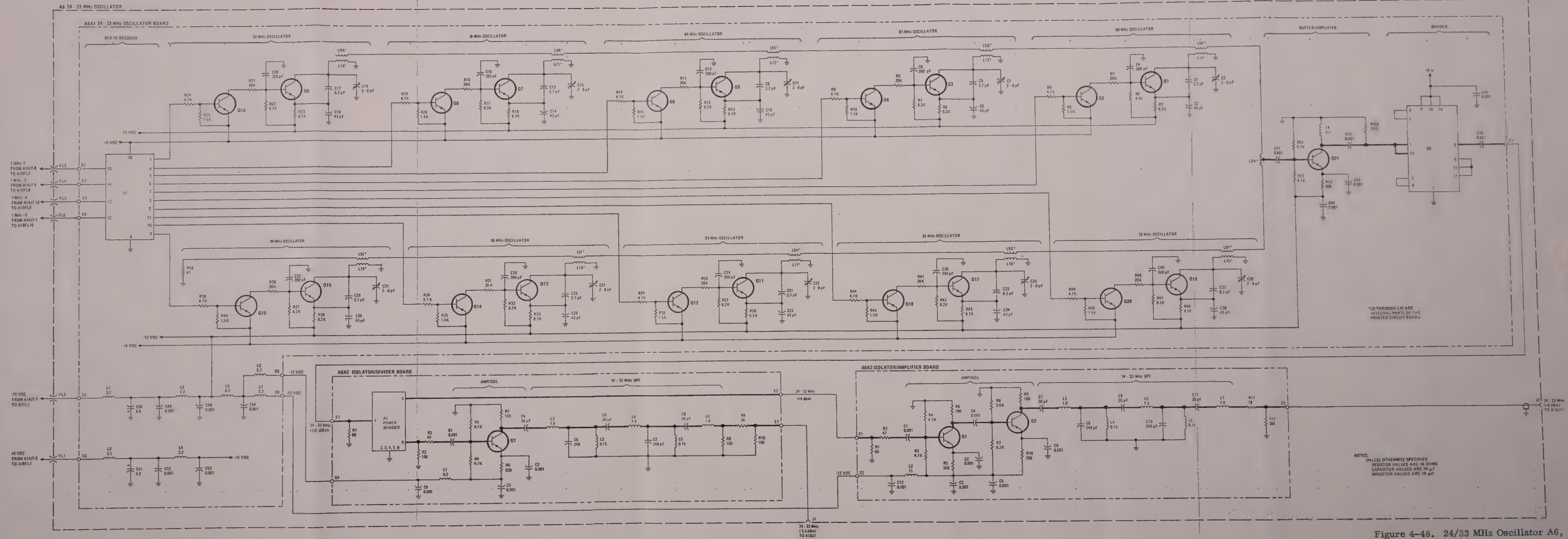


Figure 4-48. 24/33 MHz Oscillator A6, Schematic Diagram

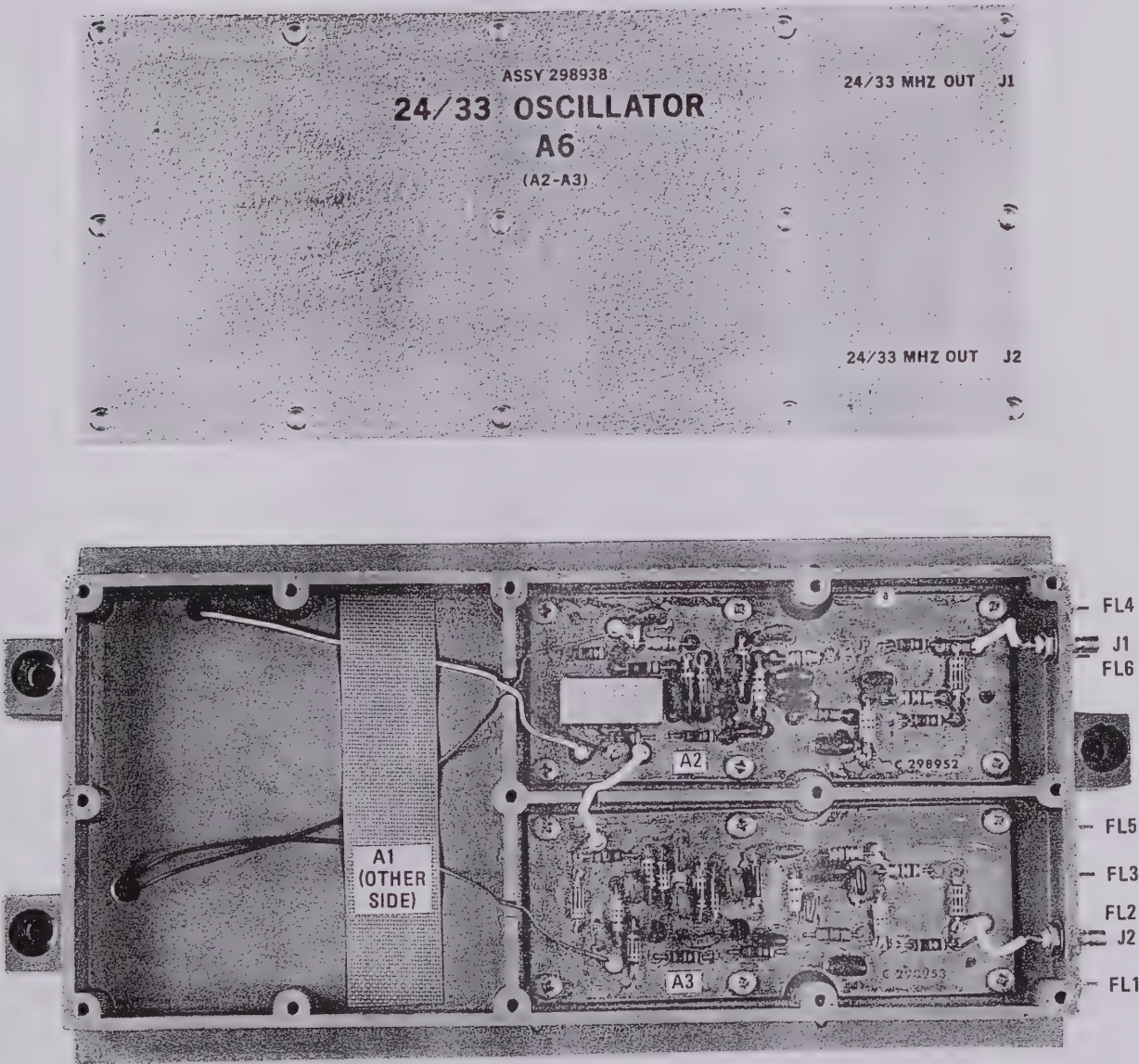


Figure 4-49. 24/33 MHz Oscillator Assembly A6

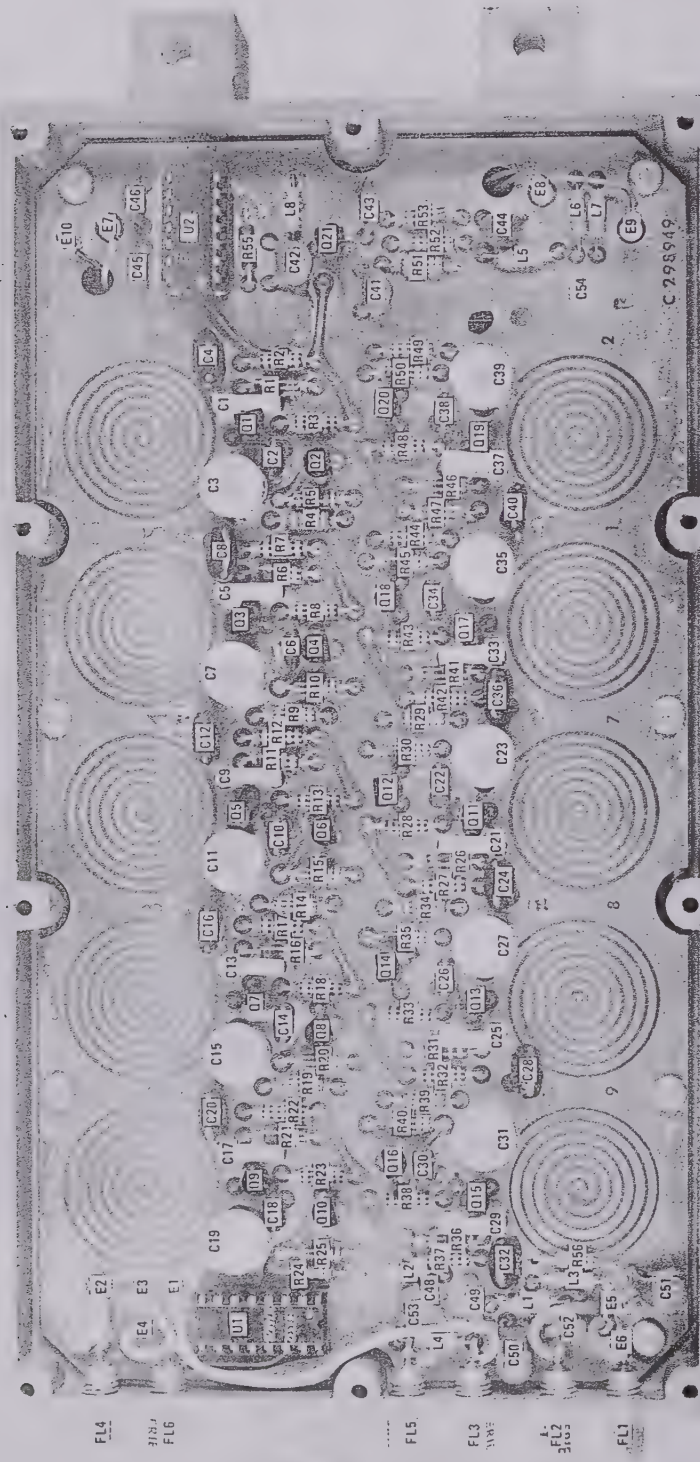


Figure 4-50. 24/33 MHz Oscillator Board A6A1, Component Locations

TABLE 4-3
BCD OUTPUT FREQUENCIES

BCD Code				Oscillator Frequency	Output Frequency
1 MHz-1	1 MHz-2	1 MHz-4	1 MHz-8		
0	0	0	0	72	24 MHz
1	0	0	0	75	25
0	1	0	0	78	26
1	1	0	0	81	27
0	0	1	0	84	28
1	0	1	0	87	29
0	1	1	0	90	30
1	1	1	0	93	31
0	0	0	1	96	32
1	0	0	1	99	33

4-105. ISOLATOR DIVIDER A6A2. (See Figures 4-48 and 4-51.)

4-106. The output from the 24/33 MHz oscillator is applied to power divider A1 which splits the signal into two outputs each feeding an isolation amplifier and band-pass filter. One amplifier isolator is on A6A3, the other is formed by Q1 on A6A2. The amplifier is followed by a 24- to 33-MHz band-pass filter which provides isolation to frequencies not in the passband and filters the harmonics of 24 to 33 MHz appearing at the filter input. The filter is formed by C4 through C8 and L2 through L6. The output is a sine wave at a level of about -6 dBm.

4-107. ISOLATOR/AMPLIFIER A6A3. (See Figures 4-48 and 4-52.)

4-108. Q1 and Q2 form an isolator/amplifier for the 24- to 33-MHz signal. The output of the amplifier feeds a band-pass filter consisting of C7 through C11 and L3 through L7. This filter filters out harmonics which appear at its input as well as providing isolation to signals outside the filter bandpass. The level out of this board is a +6 dBm sine wave.

4-109. 366 MHz FILTER CONVERTER A7. (See Figures 4-53 and 4-54.)

4-110. The 366 MHz filter converter mixes the 337-MHz output from A10J1 with the 29-MHz from the modulation unit producing 366 MHz. The 366-MHz signal is selected by the band-pass filter. The output of the filter is mixed with the 35-36 MHz output from the higher order BCD producing 330-331 MHz for further processing in filter amplifier A9.

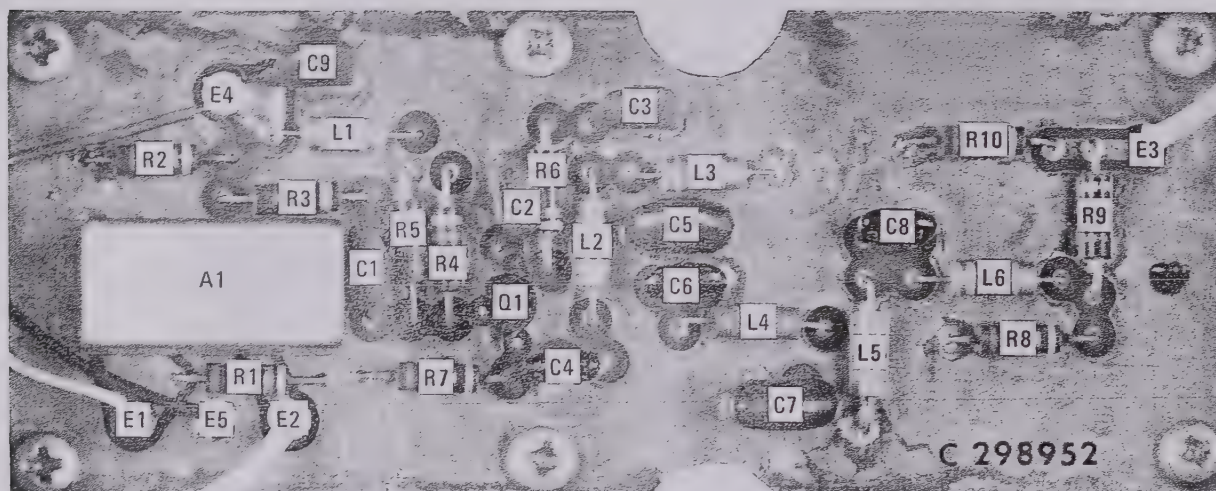
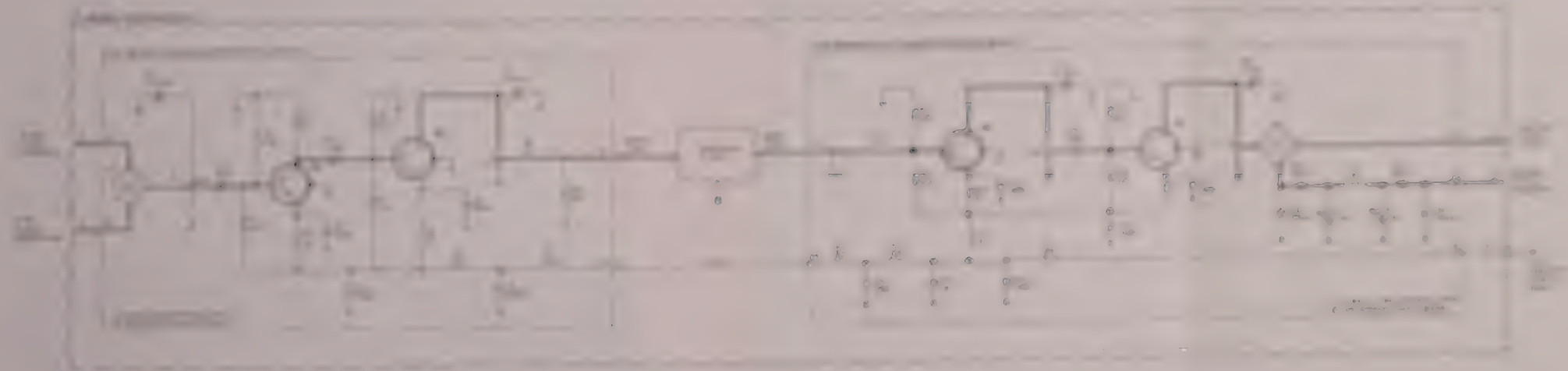


Figure 4-51. Isolator/Divider Board A6A2, Component Locations



Figure 4-52. Isolator/Amplifier Board A6A3, Component Locations



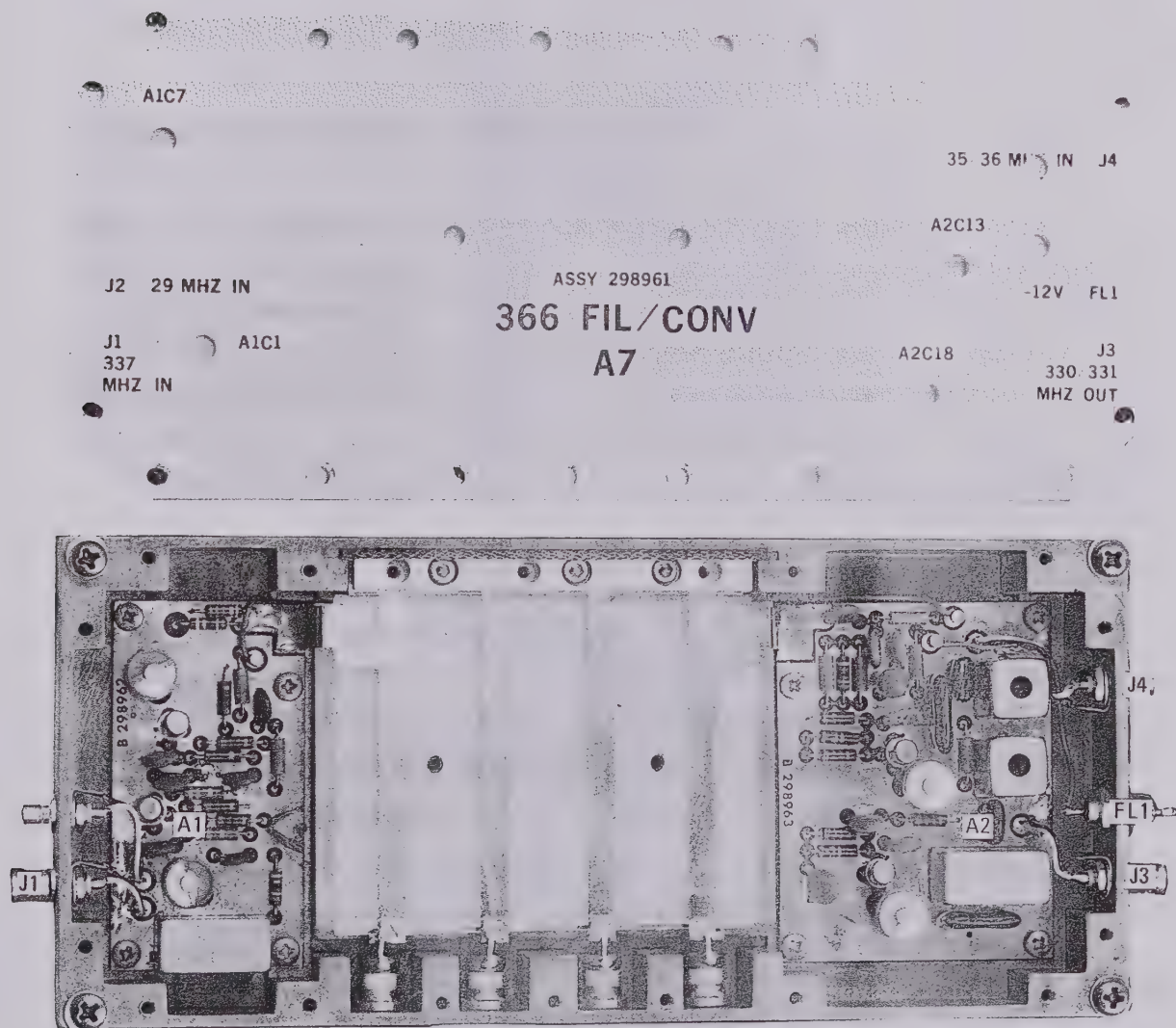


Figure 4-54. 366 MHz Filter/Converter Assembly A7

- 4-111. 366 MHz FILTER/CONVERTER INPUT BOARD A7A1. (See Figures 4-53 and 4-55.)
- 4-112. This board mixes the 337-MHz signal from the 337-MHz oscillator isolator with 29 MHz. The 29 MHz comes from an optional modulator in the RF plug-in or from 29-MHz converter A10A6. Mixer M1 produces the sum and difference of these two frequencies. The sum frequency is 366 MHz. L3 and C1 are a resonant circuit tuned to 366 MHz which select the proper input frequency for the two-stage amplifier formed by Q1 and Q2. This amplifier provides a gain of 11 dB, after the mixer conversion loss of 7 dB yielding an overall gain of 4 dB.
- 4-113. 366 MHz FILTER/CONVERTER OUTPUT BOARD A7A2. (See Figures 4-53 and 4-56.)
- 4-114. The 366-MHz signal from the band-pass filter is further amplified by Q3 and Q4 which form a 20-dB gain amplifier at 366 MHz. The output of this amplifier is at a level of +7 dBm to drive the local oscillator input of mixer M2. The 35/36 MHz from BCD section A4 is applied to a 35/36 MHz band-pass filter consisting of C19 through C22 and L7 through L9. This filter removes the 8.75 to 9 MHz sidebands which appear on the BCD output. This filtered 35/36-MHz signal is mixed with the 366-MHz signal in M2 to produce sum and difference frequencies. This signal is applied to 330/331 MHz filter amplifier A9 which selects the difference frequency 330/331 MHz.
- 4-115. 366 MHz BANDPASS FILTER
- 4-116. This is an $1/8$ wavelength stripline band-pass filter tuned to 366 MHz. The insertion loss is 7 dB. It has a 3-dB bandwidth of approximately 3 MHz and provides greater than 80-dB rejection bandwidth of 58 MHz. This in a combination with the tuned amplifiers provides the filtering required for 100-dB spurious performance.
- 4-117. 361-370 MHz FILTER AMPLIFIER A8. (See Figures 4-57 and 4-58.)
- 4-118. The 361-370 MHz filter takes the output from the mixer on board A10A2 which heterodynes the 337 MHz with the output of the 24 to 33 MHz oscillator producing 361-370 MHz. The upper sideband generated in this mixer is selected by band-pass filter A8A3.
- 4-119. 361-370 MHz INPUT BOARD A8A1
- 4-120. Input board A8A1 (Figure 4-59) amplifies the input signal by 5 dB. Resistors R1 and R2 form a 3-dB pad to terminate the mixer output. Capacitor C1 and inductor L3 form a 365-MHz resonant circuit to select the correct signal for the amplifier input. Transistor

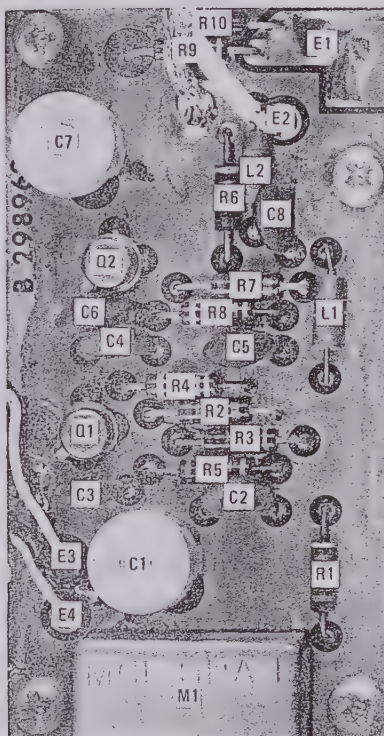


Figure 4-55. 366 MHz Filter Converter Input Board A7A1, Component Locations

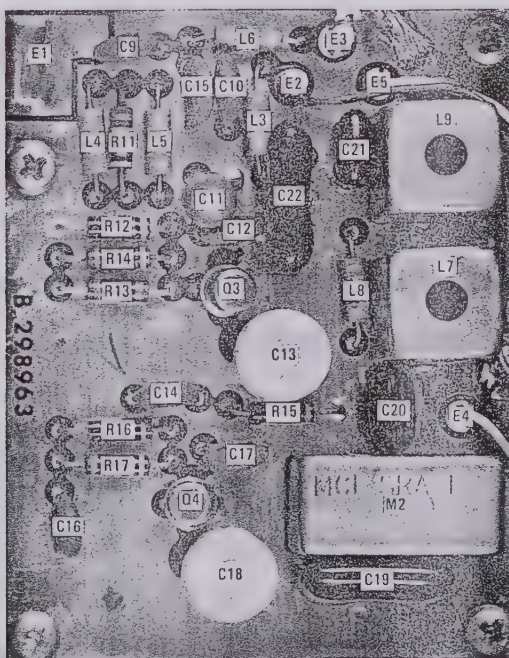


Figure 4-56. 366 MHz Filter Converter Output Board A7A2, Component Locations

Q1 has a gain of 8 dB at 365 MHz. C5 and L4 tune this amplifier and provide impedance matching at the output.

4-121. 361-370 MHz OUTPUT BOARD A8A2

4-122. Output board A8A2 (Figure 4-60) provides 15 dB of gain also tuned to 365 MHz. Amplifier Q1 is tuned by the resonant circuit formed by C4 and L8. The output of Q1 is coupled through C5 into a similar circuit. Q2 is the amplifier; C7 and L9 are the resonant circuits. Inductors L3, L4, and L5 and capacitors C9 and C10 comprise a 400-MHz low-pass filter to further reject the second harmonic of the output signal. Resistors R8 and R9 form a 3-dB pad. The output of this board goes to the RF input of mixer A10A4.

4-123. 361-370 MHz BAND PASS FILTER

4-124. This board is a 7-pole band-pass filter covering the band from 361 to 370 MHz. The insertion loss is approximately 10 dB. This filter, in conjunction with the selectivity of the input and output amplifiers, provides 100-dB rejection at 337 MHz and below.

4-125. 330-331 MHz FILTER/AMPLIFIER A9. (See Figures 4-60A and 4-61.)

4-126. The 330/331 MHz filter amplifier selects the 330- to 331-MHz lower sideband from the mixer in filter converter A7.

4-127. 330-331 MHz FILTER/AMPLIFIER INPUT BOARD A9A1. (See Figure 4-62.)

4-128. L3 and C1 form a resonant circuit tuned to 330.5 MHz to select the proper input for transistor amplifier Q1. Q1 is a 10-dB gain amplifier at 330.5 MHz tuned by the resonant circuit L4 and C6. The amplified signal is applied to narrowband band-pass filter at 330-331 MHz.

4-129. 330-331 MHz FILTER/AMPLIFIER OUTPUT BOARD A9A2. (See Figure 4-63.)

4-130. Transistors Q1 and Q2 form a 20-dB gain tuned amplifier at 330.5 MHz.

4-131. 330-331 MHz BAND-PASS FILTER

4-132. This unit is a 5-pole stripline band-pass filter having a 3-dB bandwidth of greater than 3 MHz. It provides 90 dB of rejection at 366 MHz so that in combination with the tuned amplifiers the 100-dB spur performance is guaranteed.

4-133. HIGH FREQUENCY SUBASSEMBLY A10 (See Figures 4-64 and 4-65.)

4-134. The high frequency subassembly houses all the remaining printed circuit boards used in the frequency extender.

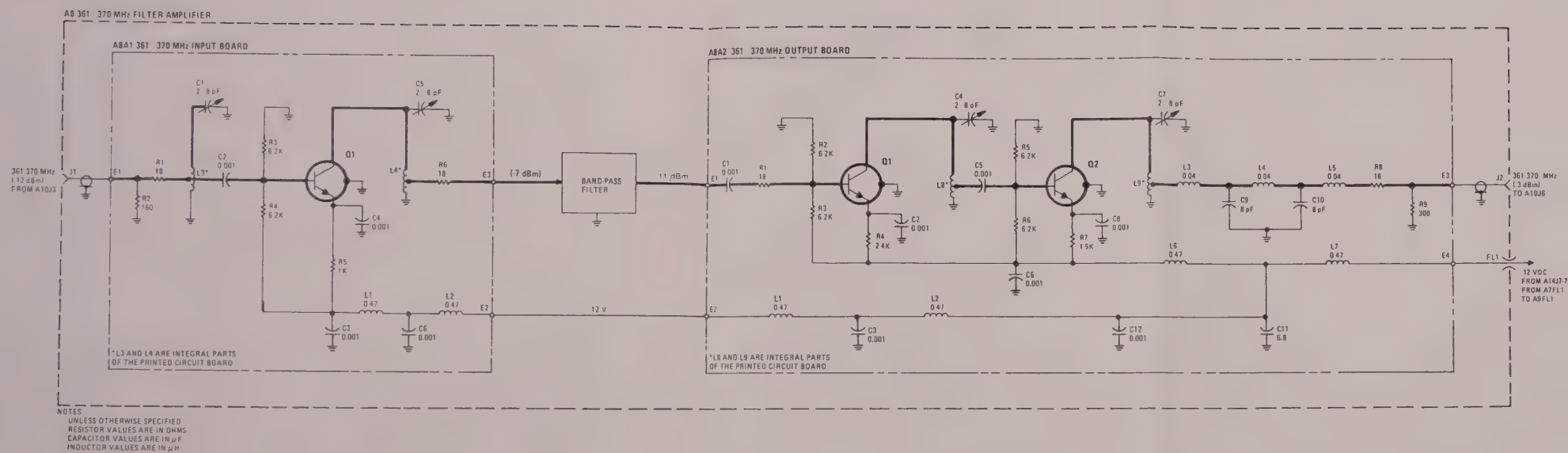


Figure 4-57. 361/370 MHz Filter/Amplifier
A8, Schematic Diagram

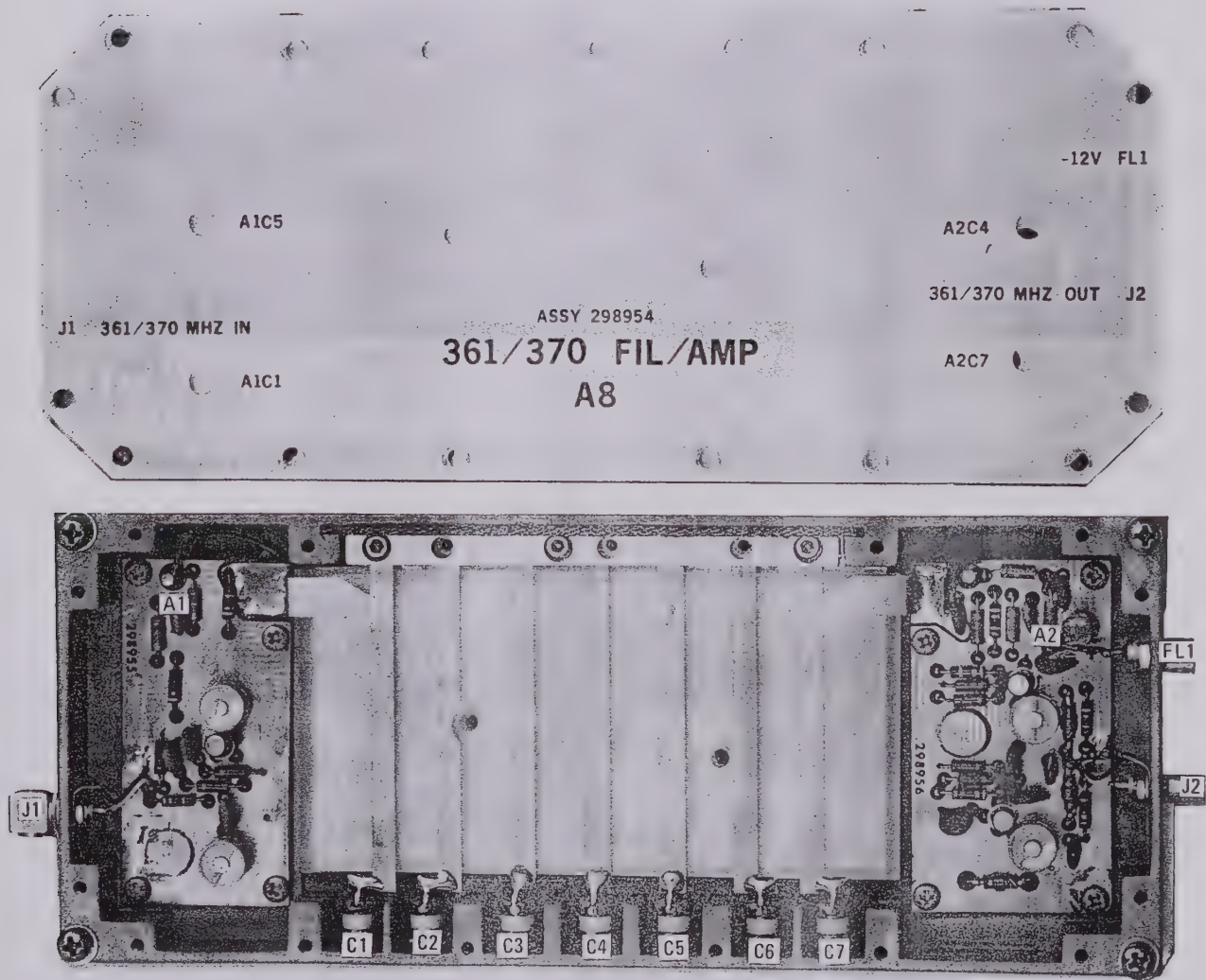


Figure 4-58. 361/370 MHz Filter/Amplifier Assembly A8

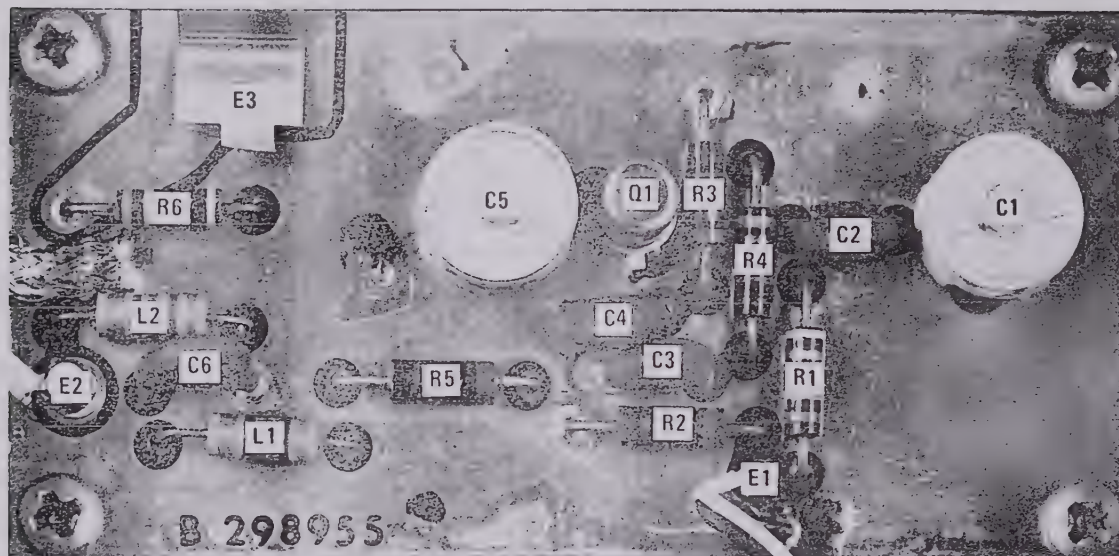


Figure 4-59. 361/370 MHz Filter/Amplifier Input Board A8A1, Component Locations

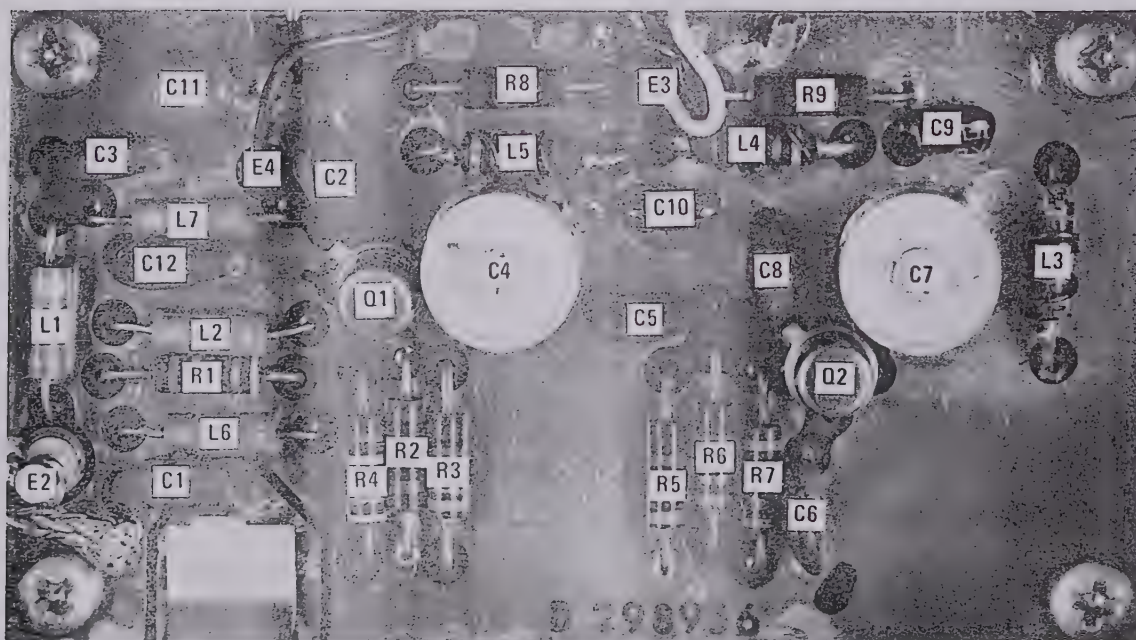


Figure 4-60. 361/370 MHz Filter/Amplifier Output Board A8A2, Component Locations

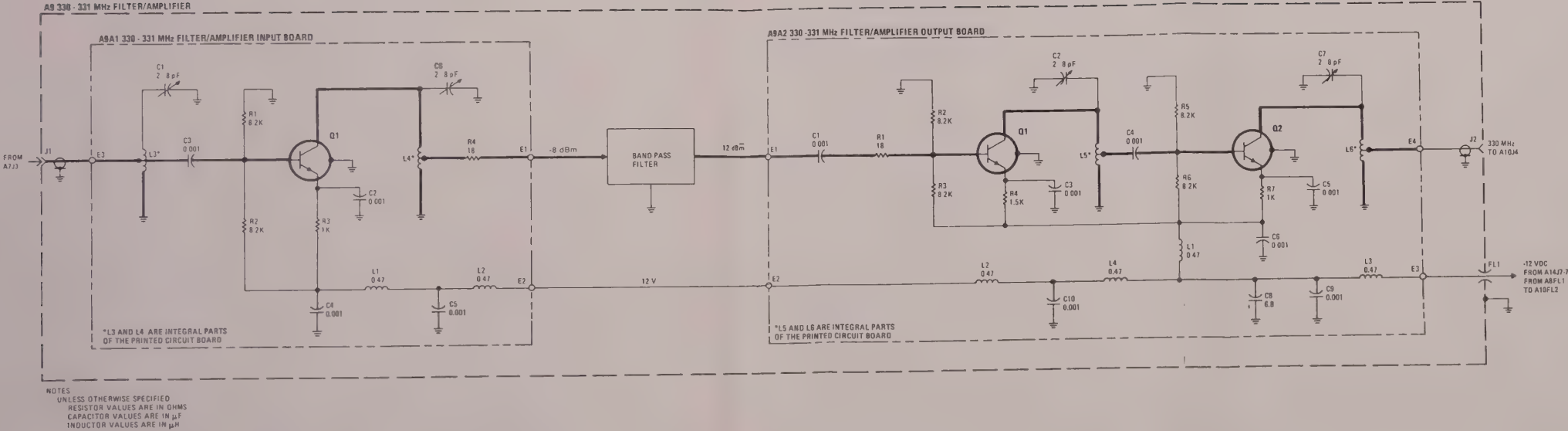


Figure 4-60A. 330-331 MHz Filter/Amplifier A9, Schematic Diagram

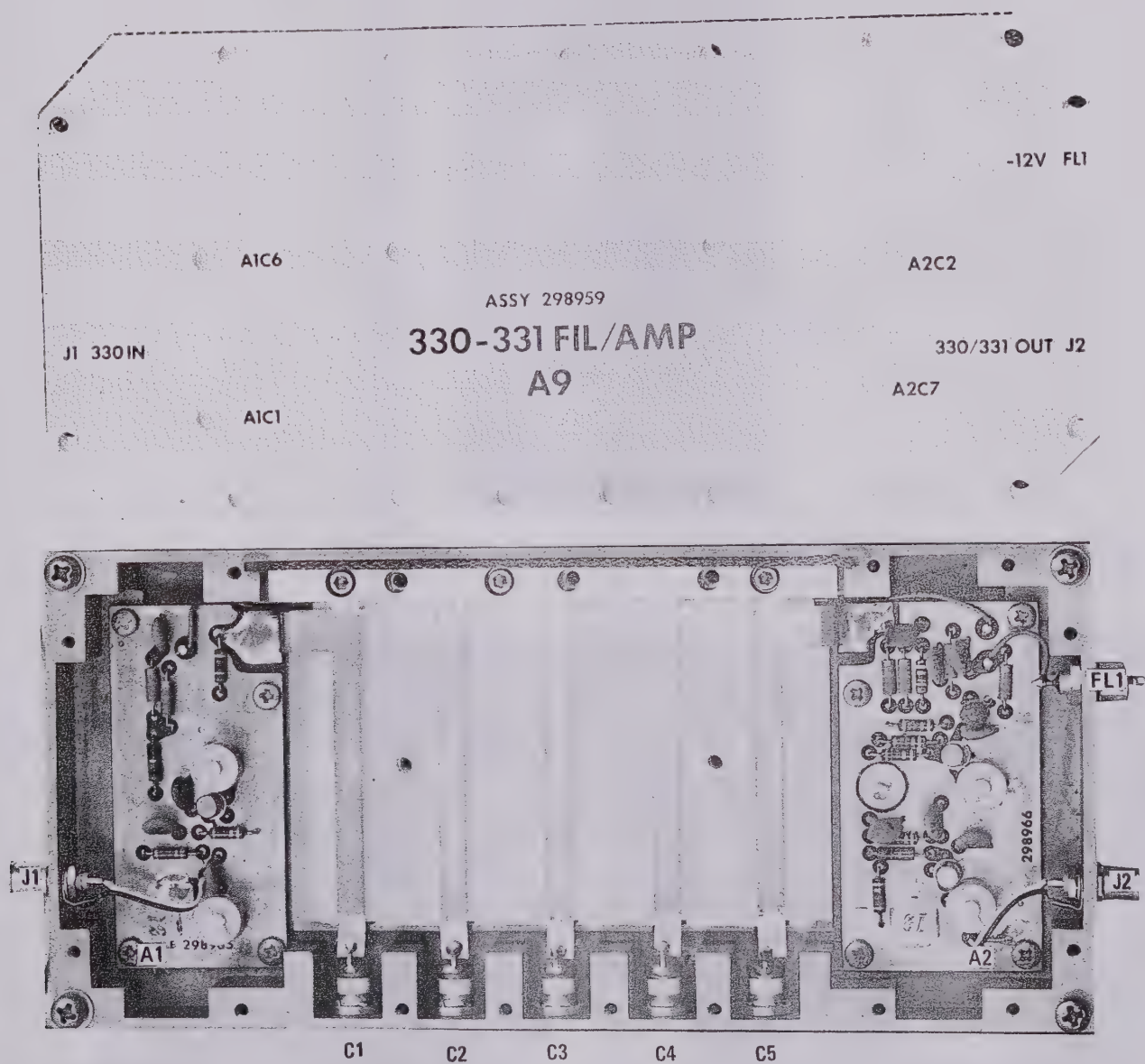


Figure 4-61. 330-331 MHz Filter/Amplifier Assembly A9

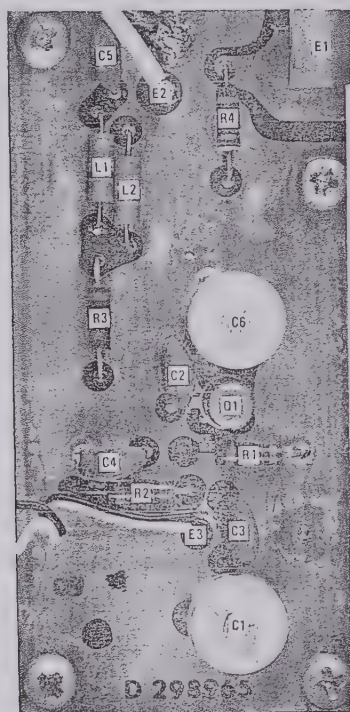


Figure 4-62. 330-331 MHz Filter/Amplifier Input Board A9A1, Component Locations

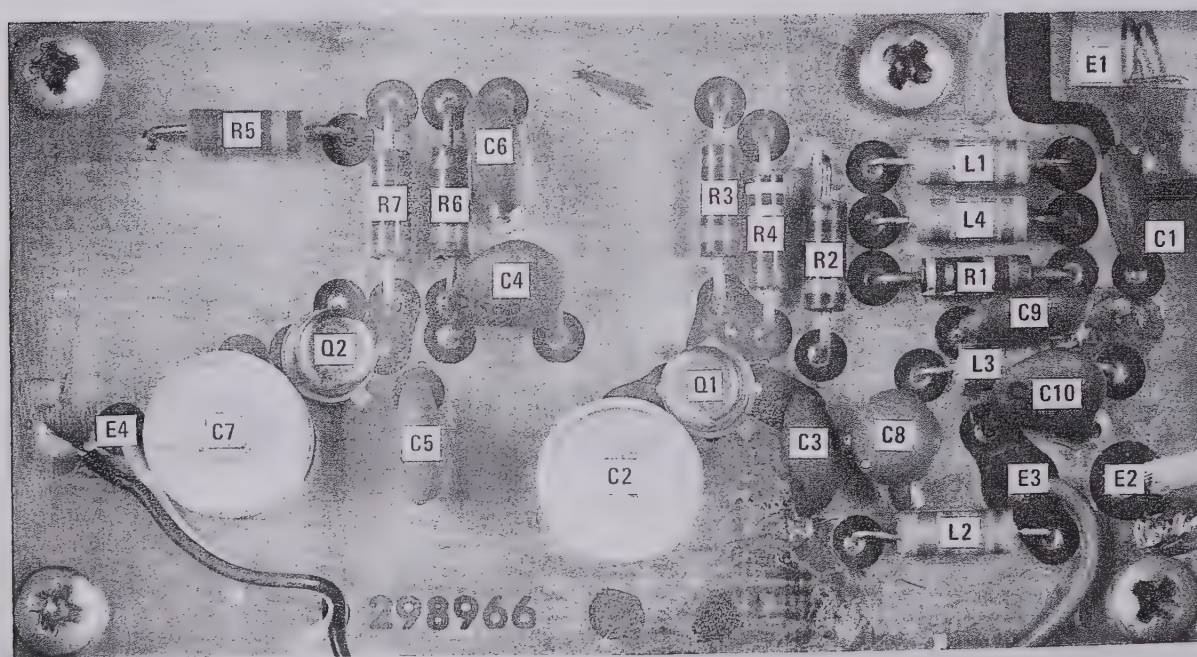


Figure 4-63. 330-331 MHz Filter/Amplifier Output Board A9A2, Component Locations

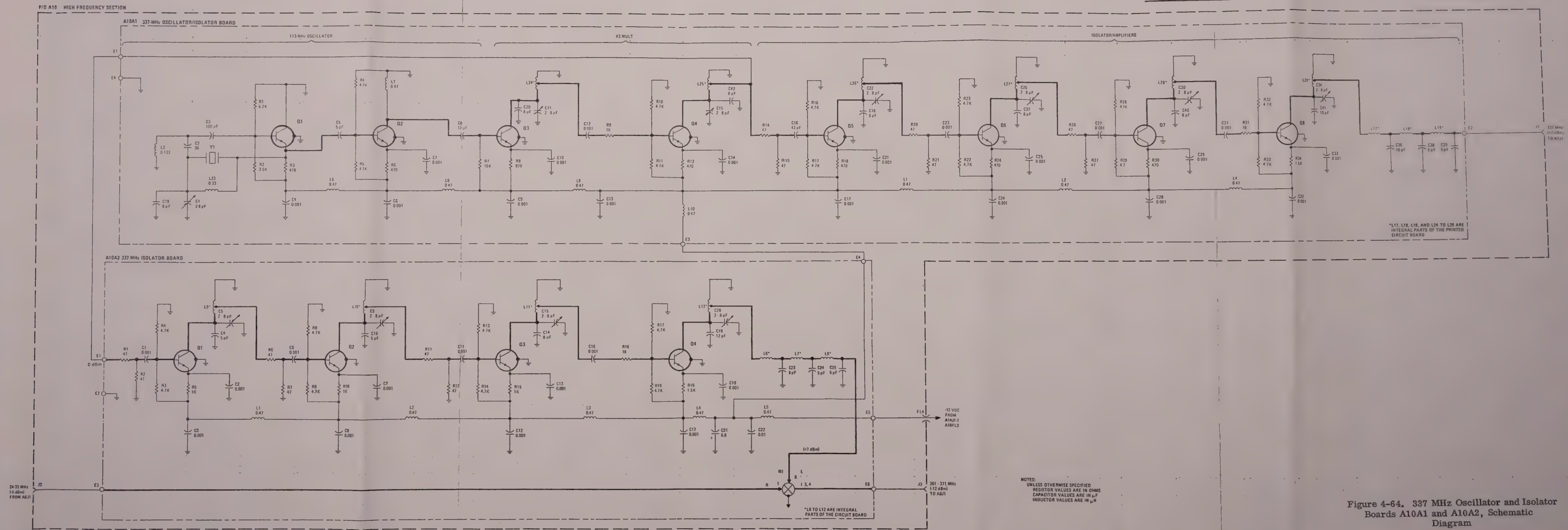
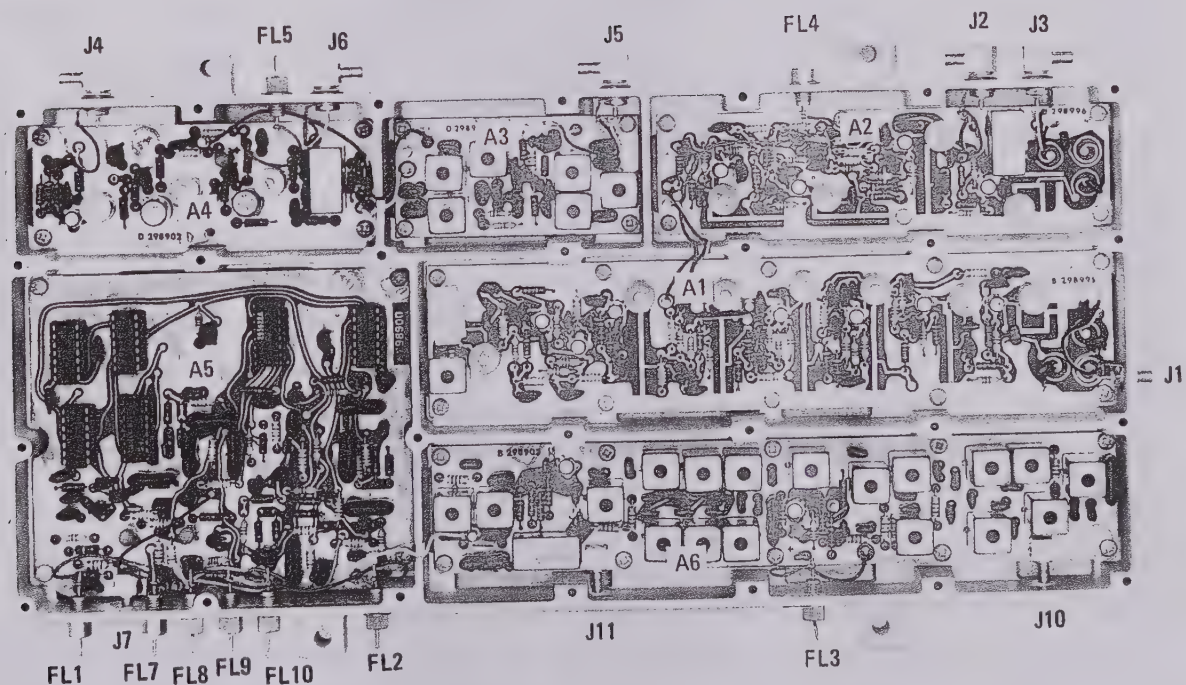


Figure 4-64. 337 MHz Oscillator and Isolator Boards A10A1 and A10A2, Schematic Diagram



4-115

4-135. 337 MHz OSCILLATOR ISOLATOR A10A1. (See Figures 4-64 and 4-66.)

4-136. This board contains a 112.3333 MHz crystal oscillator, a times three multiplier, and a four-stage active isolator. Y1 is a 112.3333 MHz crystal in an oscillator circuit formed by Q1 and associated components. Q2 is a 112-MHz amplifier which buffers and amplifies the oscillator output. Q3 and Q4 multiply this signal X3 producing 337 MHz.

4-137. At this point the 337-MHz signal is split two ways to drive two active isolators. One isolator is A10A2; the other is on this board. The isolator consists of four tuned amplifier stages followed by a 400-MHz low-pass filter. Amplifiers Q5-Q8, are tuned by the L-C circuits on each collector. The tuning capacitors for the isolator are C22, C26, C30, and C34, respectively. Each amplifier is separated by a resistive attenuator to increase the reverse isolation. Capacitors C36, C38, C39, and inductors L17, L18, and L19 comprise a 400-MHz low-pass filter to reject harmonics of the 337-MHz signal. The output level at A7J1 is +7 dBm.

4-138. 337 MHz ISOLATOR BOARD A10A2. (See Figures 4-64 and 4-67.)

4-139. This board contains an active isolator similar to A10A1. There are four, tuned-amplifier stage attenuators. Each stage provides gain in the forward direction and about 20-dB isolation in the reverse direction. The stages are separated by resistive attenuators providing increased isolation. The signal from the 337-MHz oscillator board is applied to the input attenuator formed by R1 and R2. It is amplified by common emitter stage Q1. The collector of Q1 is tuned by L9 and the parallel combination of C4 and C5.

4-140. The output of Q1 goes through three more similar stages: Q2, Q3, and Q4. Each stage provides about 20-dB reverse isolation. The tuning capacitors are C5, C9, C15, and C20. Each one is tuned for a maximum output at the mixer local oscillator input. The output of the last stage feeds a 400-MHz low-pass filter consisting of L6 through L8 and C23 through C25. The output of the filter drives mixer M1. The other input to M1 comes from 24/33 MHz oscillator at A6J1. Mixer M1 combines two signals producing sum and difference frequencies. The upper sideband, 361-370 MHz, is selected by 361-370 MHz band-pass filter A8.

4-141. 30-40 MHz BAND PASS FILTER A10A3. (See Figures 4-68 and 4-69.)

4-142. The 30-40 MHz band-pass filter selects the lower sideband of the A10A2 mixer output and provides 14-dB gain for the desired signal. It consists of two identical bandpass filters with an amplifier separating the two. The first filter is formed by C1, C2, C3, C5, L1, L2, and L3. Transistor Q1 and associated components comprise the amplifier which drives the output filter formed by C7-C10 and L4-L6. The input and output impedance of this board are 50 ohms.

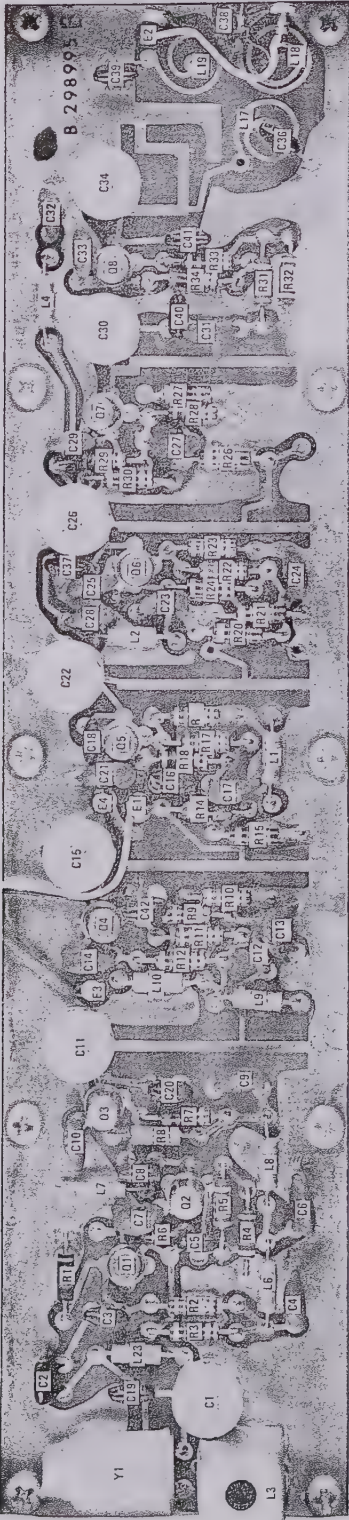


Figure 4-66. 337 MHz Oscillator Isolator Board A10A1, Component Locations

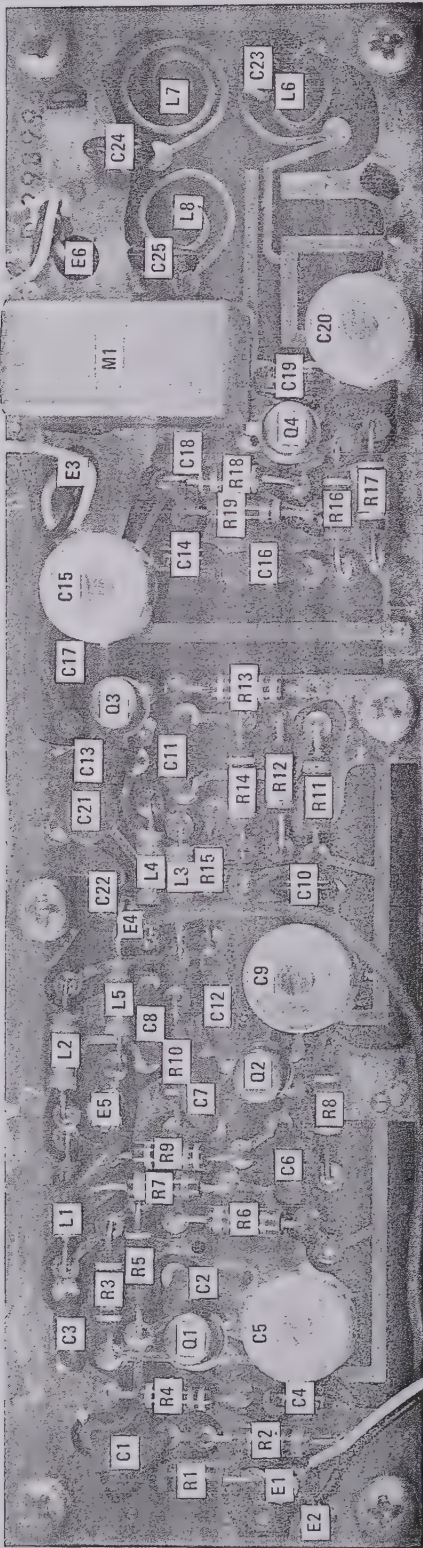


Figure 4-67. 337 MHz Isolator Board A10A2, Component Locations

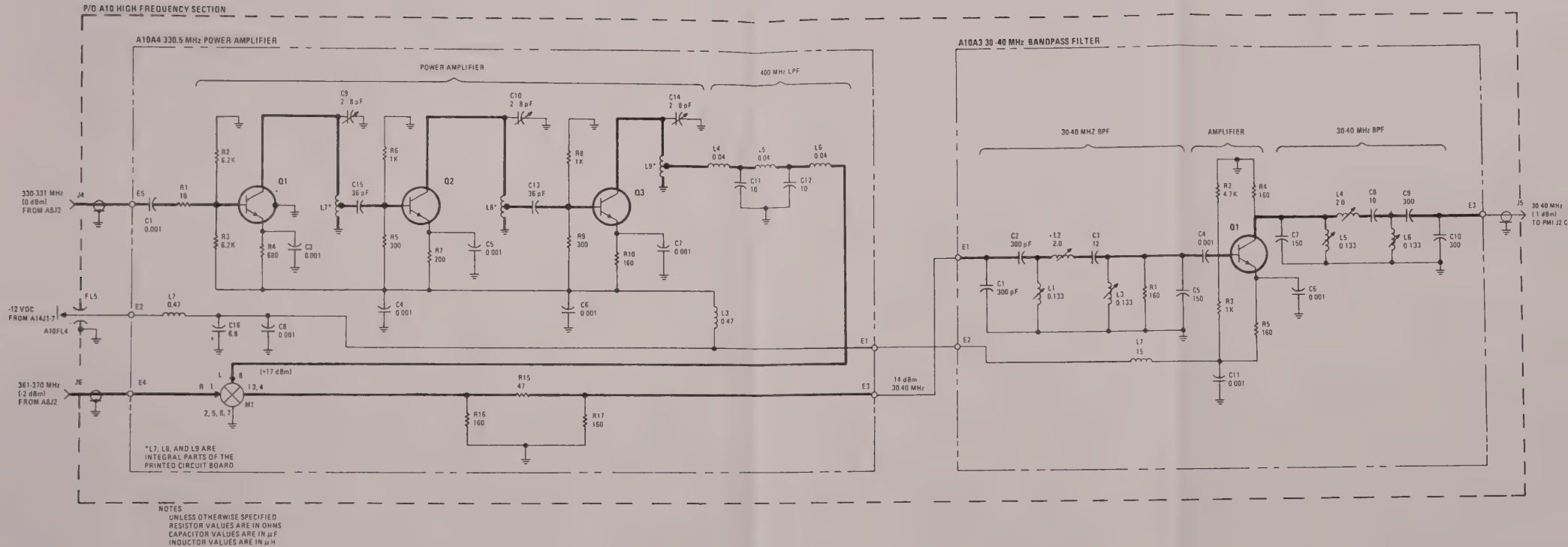


Figure 4-68. 30/40 MHz and 330 MHz Amplifiers A10A3 and A10A4, Schematic Diagram

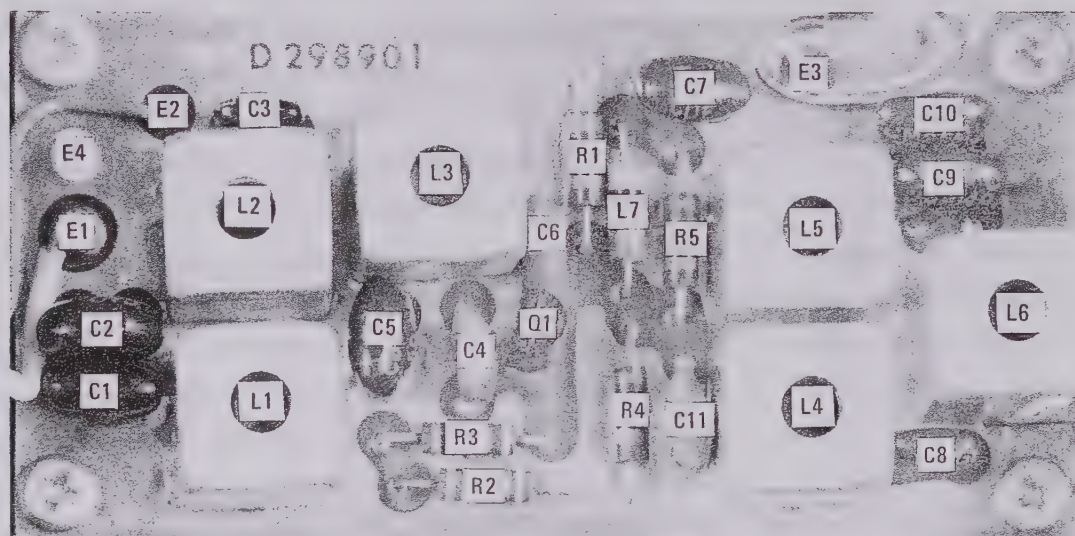


Figure 4-69. 30/40 MHz Bandpass Filter Board A10A3, Component Locations

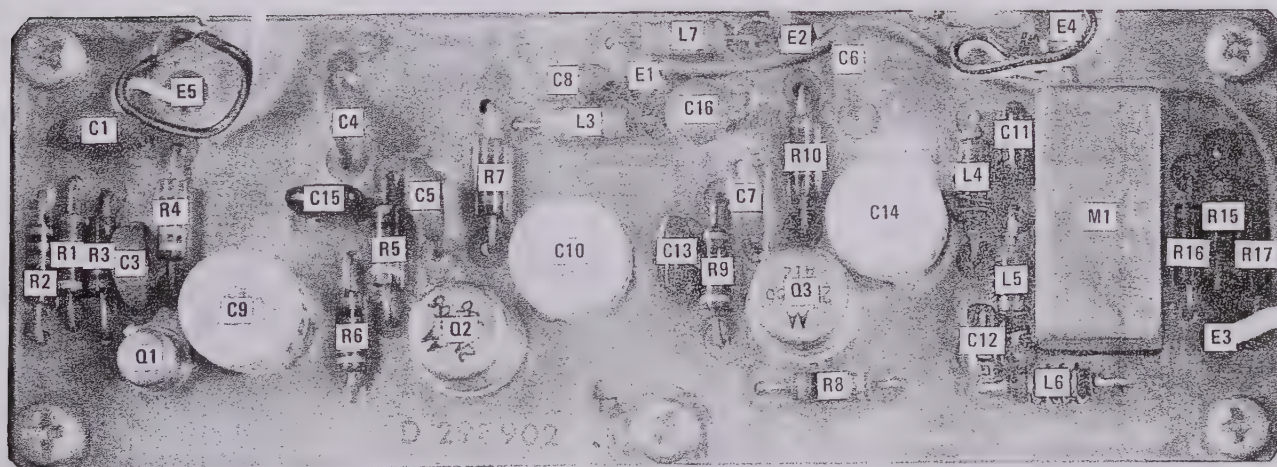


Figure 4-70. 330.5 MHz Power Amplifier Board A10A4, Component Locations

4-143. 330.5 MHz POWER AMPLIFIER A10A4. (See Figures 4-68 and 4-70.)

4-144. This unit amplifies the output of 330-331 MHz band-pass filter A9 to a level of +17 dBm, which is the local oscillator input to M1. The output of 361-370 MHz band-pass filter A8 is mixed with the signal in M1, producing the sum and difference frequencies. The 30-40 MHz difference frequency is the desired output of the frequency extender. Board A10A3 amplifies the 30-40 MHz and rejects all other mixer outputs.

4-145. The amplifier portion of this board consists of three stages. The first stage formed by Q1 and associated components is tuned by C9 and L7 providing 10 dB of gain at 330.5 MHz. This feeds 6-dB gain amplifier Q2 which is tuned by C10 and L8 to 330.5 MHz. The third 6-dB gain amplifier, Q3, develops the final power which is tuned by C14 and L9. The harmonics of final signal are removed by the 400-MHz low-pass filter formed by L4, L5, L6, C11, and C12.

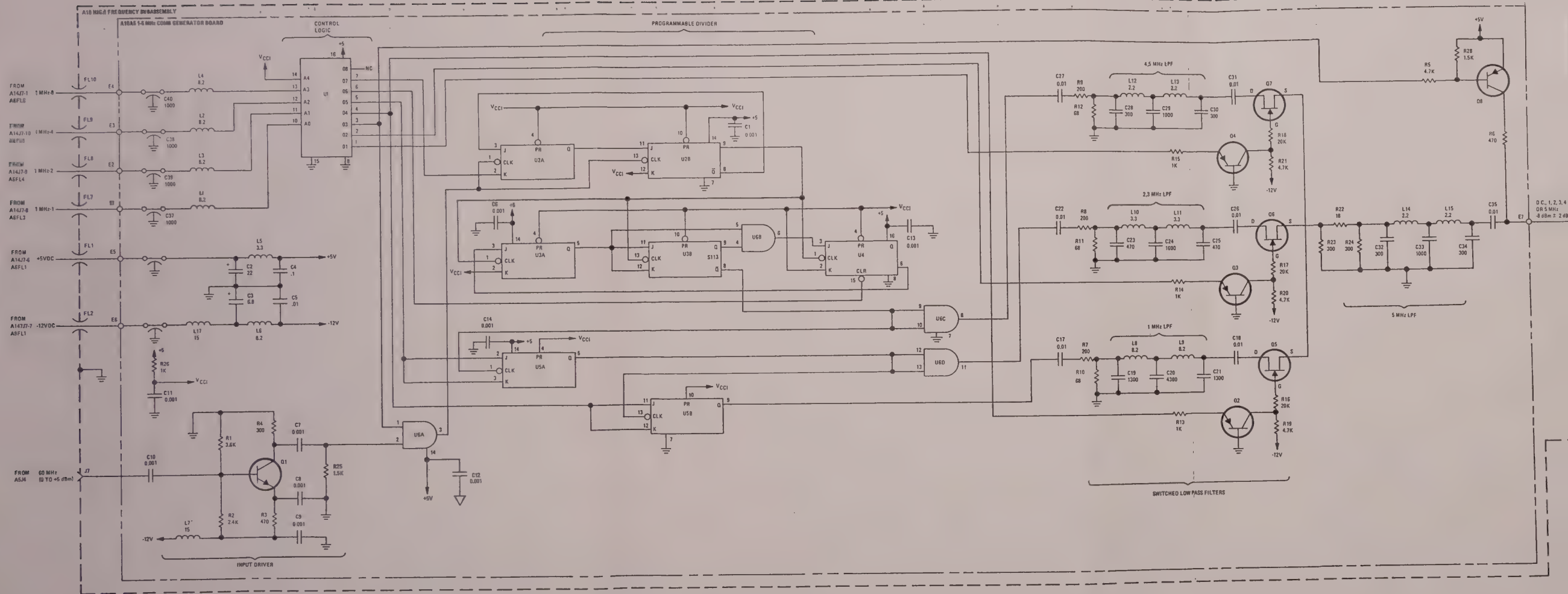
4-146. The signal from the local oscillator drives mixer M1 which mixes with the 361-370 MHz producing 30-40 MHz. The mixer IF output passes through a 6-dB attenuator. The output of the board is applied to A10A3.

4-147. 1-5 MHz COMB GENERATOR A10A5. (See Figures 4-71 and 4-72.)

4-148. This board contains a programmable divider and low-pass filters. It generates dc, 1, 2, 3, 4, or 5 MHz depending on the 1-MHz frequency control BCD digit. The 1-MHz digit appears on E1, E2, E3, E4, and A10 FL7, FL8, FL9, FL10, respectively. These logic signals are applied to the prom U1 which controls the programmable divider consisting of 4 dividers U2, U3, U4 and U5. Table 4-4 shows the truth table for prom U1.

TABLE 4-4. PROM A10A5U1 TRUTH TABLE

BCD Digit	Input Code				divider function	U1-1	U1-2	U1-3	U1-4	U1-5	U1-6	U1-7	Fout
	E4	E3	E2	E1									
0	0	0	0	0	12	1	0	1	0	0	0	1	5 MHz
1	0	0	0	1	15	1	0	1	0	0	1	1	4 MHz
2	0	0	1	0	20	0	1	1	0	1	1	0	3 MHz
3	0	0	1	1	30	0	1	1	0	1	1	1	2 MHz
4	0	1	0	0	60	0	0	1	1	1	1	1	1 MHz
5	0	1	0	1	-	0	0	0	0	1	1	1	0 MHz
6	0	1	1	0	60	0	0	1	1	1	1	1	1 MHz
7	0	1	1	1	30	0	1	1	0	1	1	1	2 MHz
8	1	0	0	0	20	0	1	1	0	1	1	0	3 MHz
9	1	0	0	1	15	1	0	1	0	0	1	1	4 MHz



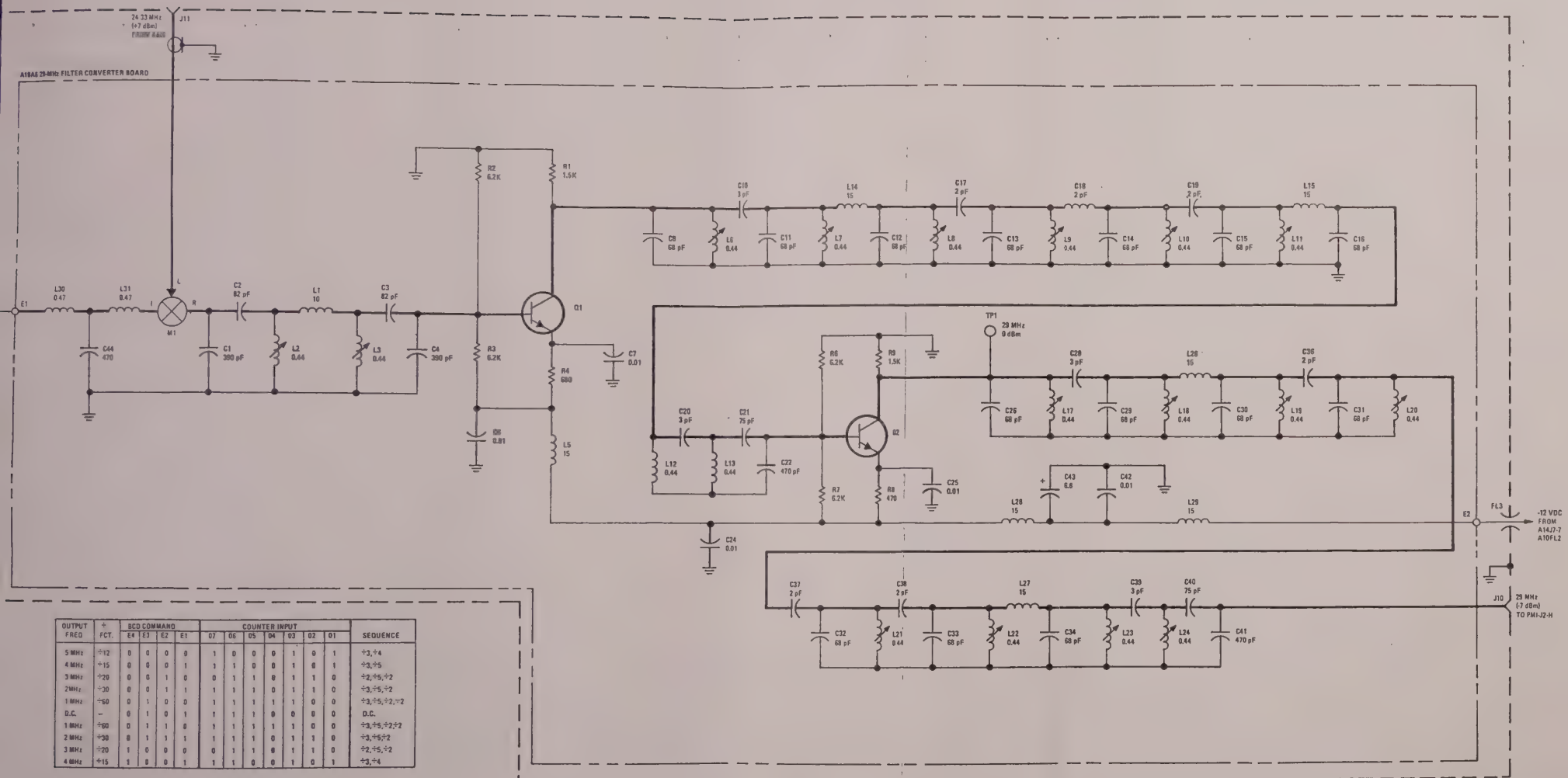


Figure 4-71. 1-5 MHz Comb Generator A10A5 and 29 MHz Filter Converter A10A6, Schematic Diagram

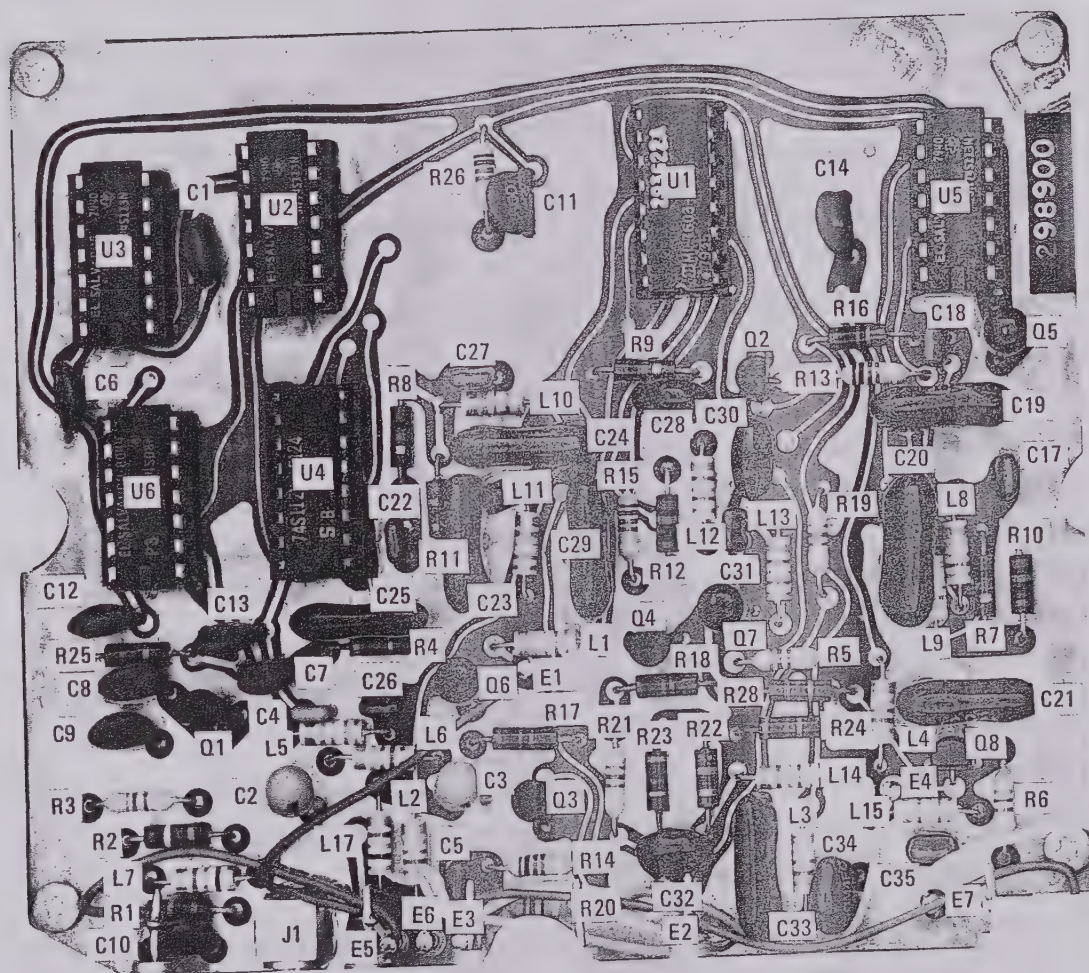


Figure 4-72. 1-5 MHz Comb Generator A10A5, Component Locations

4-149. The programmable divider output appears at U1-11. This output is divided by an additional 2 or 4 by U3A, or U3A and U3B, respectively, as required for 1-, 2-, and 3-MHz outputs.

4-150. The 60 MHz from the fixed frequency generator A5 is applied to driver Q1 which buffers the 60 MHz and drives U1. U1 in combination with U2 and U4 form the programmable divider.

4-151. U1 is a programmable binary counter which is set up to divide the 60-MHz input frequency by 10, 12, or 15 as determined by the BCD digit input control logic. U2 and U4 are used to detect the positive edge of the Q_D , U1 pin 11 of the counter and two counts later outputs a pulse to the parallel entry (PE) input of the counter which is synchronously programmed with the starting count.

4-152. As indicated in the truth table, the counter output is the first stage of the divide sequence. Some input digits require an additional divide by 2 or 4 which is provided by U3. Each of these flip-flops is controlled by outputs from the control logic.

4-153. The output of the programmable divider appears at U3 pin 6 for 1 MHz, U3 pin 8 for 2 and 3 MHz, and U1 pin 11 for 4 and 5 MHz, depending on which frequency is programmed. The outputs are square waves and need filtering before the final output is useable. Transistors Q5, Q6, and Q7 form a single-pole, three-throw FET switch which selects the appropriate low-pass filter output. This output passes through a 3-dB attenuator formed by R22 through R24 and a final low-pass filter consisting of L14 and L15 and C32 through C34. Transistor Q8 is turned on only when the output is required to be a dc level. The output of the comb generator feeds the 29-MHz converter at a level of -8 dBm.

4-154. 29 MHz FILTER CONVERTER A10A6. (See Figures 4-71 and 4-73.)

4-155. This board mixes the dc to 5-MHz output of A10A5 with the 24 to 33 MHz output of A6 producing 29 MHz. The 29 MHz is amplified and filtered to eliminate all signals 1 MHz and more away from 29 MHz.

4-156. The input from A10A5 at E1 passes through the low-pass filter formed by L30, L31, and C44. This reduces high frequency harmonics which may be present on the 1 to 5 MHz signal. This signal mixes with 24 to 33 MHz from A6 in M1. The 29-MHz sideband is selected by the two-pole band-pass filter formed by C1 through C4 and L1 through L3. The 29 MHz is amplified by Q1 which drives an eight pole band-pass filter consisting of C8, C10-C22, and L6-L15. The output of this filter is amplified by Q2 which drives another eight pole band-pass filter. This second eight pole filter is formed by C26, C28-C34, C36-C41,

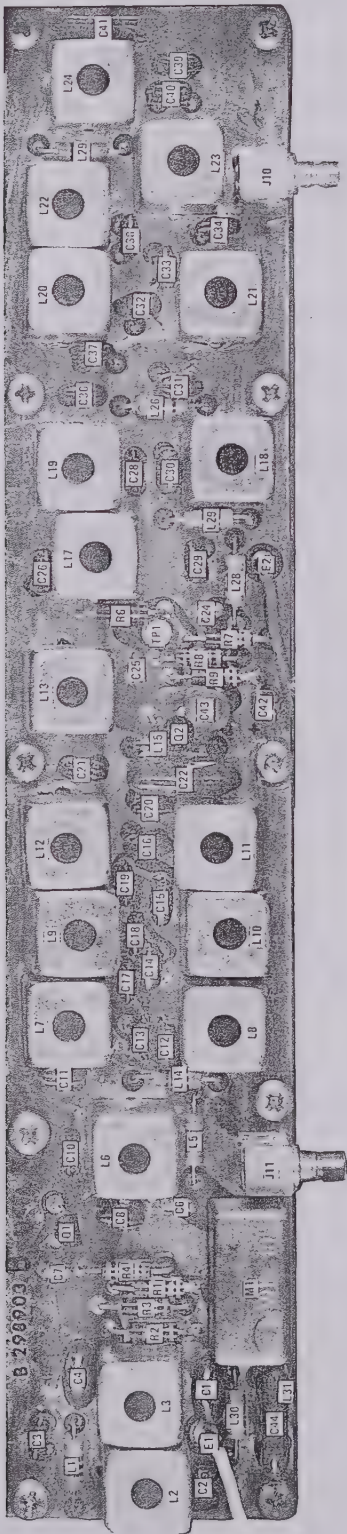


Figure 4-73. 29 MHz Filter Converter A10A6, Component Locations

L17-L24, L26, and L27. The output of this board is at a level of -7 dBm and goes to the plug-in interface connector to drive the optional modulator. The output of the modulator, also 29 MHz, goes to the 366 MHz filter amplifier A7.

4-157. MAINFRAME CALIBRATION ADJUSTMENTS

4-158. +5.2 VOLTS

- a. Connect digital voltmeter between +5.2 volt test point on A14 and chassis ground. Turn system on.
- b. Adjust A11A2R10 until digital voltmeter reads +5.20 volts $\pm$ 10 mV.

4-159. -12.0 VOLTS

- a. Connect digital voltmeter between -12.0 volt test point on A14 and chassis ground. Turn system on.
- b. Adjust A11A3R9 until digital voltmeter reads -12.00 volts $\pm$ 10 mV.

4-160. FREQUENCY EXTENDER ADJUSTMENTS

4-161. 24-33 MHz OSCILLATOR FREQUENCY

- a. Connect frequency counter to A6J2.
- b. Turn unit on and set front panel frequency select switches to 30.000000 MHz.
- c. Adjust A6A1C19 until frequency counter reads 24.000 MHz $\pm$ 10 kHz.
- d. Switch 1 MHz switch from 0 to 9 in 1 MHz steps. Adjust the appropriate capacitor until frequency counter reads the nominal oscillator frequency to within $\pm$ 10 kHz. (See Table 4-5.)

TABLE 4-5. NOMINAL OSCILLATOR FREQUENCIES

Frequency Selected (MHz)	Nominal Frequency At A6J2 (MHz)	Adjustment Capacitor on A6A1
30.000000	24	C19
31.000000	25	C35
32.000000	26	C39
33.000000	27	C15
34.000000	28	C11
35.000000	29	C7
36.000000	30	C3
37.000000	31	C23
38.000000	32	C27
39.000000	33	C31

4-162. BANDPASS FILTERS

4-163. There are three stripline band-pass filters in the frequency extender module. Each filter is incorporated in a module containing amplifiers, mixers, etc. All of the filters are synchronously tuned for minimum insertion loss across the frequency band required. Adjustments can be made with the bottom cover removed by lifting each filter up, but leaving all wires and cables connected. The minimum 3-dB bandwidth of each filter is summarized below:

<u>A Number</u>	<u>Unit Name</u>	<u>Minimum 3 dB Bandwidth</u>
A7	366 MHz Filter Converter	3 MHz
A8	361-370 MHz Filter Amplifier	12 MHz
A9	330/331 MHz Filter Amplifier	3 MHz

4-164. 366 MHz FILTER CONVERTER A7

- Set frequency of synthesizer to 35.5000000 MHz.
- Connect spectrum analyzer to A7A3 and tune analyzer to 330.5 MHz.
- Adjust filter tuning capacitor to maximize the signal.
- The level should be greater than -18 dBm. If it is not, refer to the frequency extender troubleshooting chart (Figure 4-6) for more information.

4-165. 361-370 MHz FILTER AMPLIFIER A8

- Connect spectrum analyzer to A8J2 and tune analyzer to 366 MHz.
- Set frequency synthesizer to 35.0000000 MHz.
- Tune filter adjustment capacitors to maximize the signal at 366 MHz.
- Set synthesizer to 30.0000000 MHz and then 39.0000000 MHz.
- The signal should move from 361 to 370 MHz and remain above -5 dBm across the band.

Note

The filter adjustment and amplifier capacitors should be used to maximize the signal across this band.

4-166. 330-331 MHz FILTER AMPLIFIER A9

- Connect A9J2 to a spectrum analyzer and tune analyzer to 330.5 MHz.
- Set synthesizer for 35.5 MHz.
- Tune filter adjustment capacitors and amplifier tuning capacitors to maximize this signal.
- The level should be greater than -4 dBm. If it is not, refer to the frequency extender troubleshooting chart (Figure 4-6) for more information.

CHAPTER 5

REPLACEABLE PARTS LIST

5-1. INTRODUCTION

5-2. This chapter contains the replaceable parts list for the AILTECH 360D11 Mainframe and 3600E1 Frequency Extender (Figure 5-1). The parts list contains the reference designation, AILTECH part number, quantity, description, manufacturers code, and manufacturers part number. Table 5-1 lists manufacturers by manufacturers code.

5-3. The mainframe parts (A1, A2, A4, A5, A11, A12, and A14) are listed on pages 5-1 through 5-33. The frequency extender parts (A6-A10) are listed on pages 5-34 through 5-48.

TABLE 5-1. REPLACEABLE PARTS LIST

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1	296417-1	1	360D11 MAIN FRAME	56872	296417-1
W1	299297-001	1	CABLE ASSEMBLY, COAXIAL	56872	299297-001
W2	299297-002	1	CABLE ASSEMBLY, COAXIAL	56872	299297-002
W3	299297-003	1	CABLE ASSEMBLY, COAXIAL	56872	299297-003
W4	299297-004	1	CABLE ASSEMBLY, COAXIAL	56872	299297-004
W5	299297-005	1	CABLE ASSEMBLY, COAXIAL	56872	299297-005
W6	299297-006	1	CABLE ASSEMBLY, COAXIAL	56872	299297-006
W7	299297-007	1	CABLE ASSEMBLY, COAXIAL	56872	299297-007
W8	299297-008	1	CABLE ASSEMBLY, COAXIAL	56872	299297-008
W9	299297-009	1	CABLE ASSEMBLY, COAXIAL	56872	299297-009
W10	299297-010	1	CABLE ASSEMBLY, COAXIAL	56872	299297-010
W12	299297-012	1	CABLE ASSEMBLY, COAXIAL	56872	299297-012
W14	299297-014	1	CABLE ASSEMBLY, COAXIAL	56872	299297-014
W18	299297-018	1	CABLE ASSEMBLY, COAXIAL	56872	299297-018
W23	299297-023	1	CABLE ASSEMBLY, COAXIAL	56872	299297-023
W24	299297-024	1	CABLE ASSEMBLY, COAXIAL	56872	299297-024
	231863-001	1	HARNESS ASSEMBLY, MAIN FRAME	56872	231863-001
	231871-001	1	RIBBON CABLE, MAIN FRAME	56872	231871-001
	294948-001	1	LINE CORD	56872	294948-001
1A1	296779-001	1	FRONT PANEL, ASSEMBLY (FIGURE 3-1)	56872	296779-001
CR1	293274-001	3	DIODE, GREEN	28480	5082-4955
CR2	293272-001	1	DIODE, YELLOW	28480	5082-4555
CR3	293274-001		DIODE, GREEN	28480	5082-4955
CR4	293274-001		DIODE, GREEN	28480	5082-4955
S1	294544-001	1	SWITCH, 4PDT	95146	MTA-406N
S2	294543-001	1	SWITCH, SPDT	95146	MTA-106D
1A1A1	299202-004	1	FREQUENCY SELECTOR SWITCH ASSEMBLY (FIGURE 4-9)	56872	299202-004
E1	293050-001	2	TERMINAL, PIN	00779	61137-1
E2	293050-001		TERMINAL, PIN	00779	61137-1
J1	299932-001	2	HEADER, 26 PIN	00779	1-87227-3
J2	299932-001		HEADER, 26 PIN	00779	1-87227-3
R1	299701-103	44	RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R2	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A1A1R3	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R4	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R5	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R6	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R7	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R8	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R9	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R10	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R11	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R12	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R13	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R14	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R15	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R16	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R17	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R18	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R19	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R20	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R21	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R22	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R23	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R24	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R25	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R26	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R27	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R28	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R29	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R30	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R31	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R32	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R33	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R34	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R35	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R36	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R37	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R38	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R39	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R40	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R41	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R42	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R43	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
R44	299701-103		RESISTOR, 10K, 1/4 W, 5%	01121	RC07GF103J
S1	296807-002	1	SWITCH ASSEMBLY	56872	296807-002
1A2	298933-002	1	BCD LOWER ORDER ASSEMBLY (FIGURE 4-12)	56872	298933-002
W1	299227-001	1	CABLE ASSEMBLY	56872	299227-001
1A2A1	299204-001	1	FIXED TUNED BCD 1 kHz PC BOARD (FIGURE 4-14)	56872	299204-001
C1	299243-001	19	CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C2	299244-001	26	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C3	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C4	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C5	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C6	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C7	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C8	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C9	299241-200	6	CAP:FXD DIP MICA 20PF +-5% 300WVDC	72136	DM5-200J
C10	299241-101	1	CAP:FXD DIP MICA 100PF +-5% 300WVDC	72136	DM5-101J
C11	299241-200		CAP:FXD DIP MICA 20PF +-5% 300WVDC	72136	DM5-200J
C12	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C13	299241-430	4	CAP:FXD DIP MICA 43PF +-5% 300WVDC	72136	DM5-430J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A1C14	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C15	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C16	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C17	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C18	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C19	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C20	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C21	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C22	299241-100	6	CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C23	299241-680	3	CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C24	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C25	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C26	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C27	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C28	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C29	299250-131	3	CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C30	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C31	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C32	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C33	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C34	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C35	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C36	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C37	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C38	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C39	299241-120	2	CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C40	299241-750	1	CAP:FXD DIP MICA 75PF +5% 300WVDC	72136	DM5-750J
C41	299241-120		CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C42	294075-001	2	CAP:FXD CER .1UF +20% 50WVDC	72982	8121-050-651-104M
C43	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C44	299250-241	3	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C45	299250-151	1	CAP:FXD DIP MICA 150PF +5% 500WVDC	14655	CM04FD151J03
C46	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C47	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C48	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C49	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C50	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C51	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C52	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C53	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C54	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C55	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C56	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C57	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C58	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C59	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C60	294075-001		CAP:FXD CER .1UF +20% 50WVDC	72982	8121-050-651-104M
C61	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C62	299241-270	1	CAP:FXD DIP MICA 27PF +5% 300WVDC	72136	DM5-270J
C63	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C64	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C65	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C66	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C67	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C68	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C69	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C70	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C71	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C72	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C73	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C74	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C75	299240-002	1	CAP:FXD ELECTROLYTIC 22UF +20% 15WVDC	31433	T368B226M015AS

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A1C76	299240-001	1	CAP:FXD ELECTROLYTIC 6.8UF +20% 35WVDC	31433	T368B685M035AS
C77	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C78	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C79	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C80	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
CR1	299251-001	8	DIODE:SIGNAL	72314	IN4009
CR2	299251-001		DIODE:SIGNAL	72314	IN4009
CR3	299251-001		DIODE:SIGNAL	72314	IN4009
CR4	299251-001		DIODE:SIGNAL	72314	IN4009
CR5	299251-001		DIODE:SIGNAL	72314	IN4009
CR6	299251-001		DIODE:SIGNAL	72314	IN4009
CR7	299251-001		DIODE:SIGNAL	72314	IN4009
CR8	299251-001		DIODE:SIGNAL	72314	IN4009
E1	293310-001	8	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293310-001		TERMINAL SOLDER	71279	1597-2-01
E7	293310-001		TERMINAL SOLDER	71279	1597-2-01
E8	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-026	4	INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L2	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L3	299237-038	11	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L4	299237-032	4	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L5	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L6	299237-022	4	INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L7	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L8	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L9	299237-028	2	INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L10	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L11	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L12	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L13	299237-024	6	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L14	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L15	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L16	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L17	299237-020	2	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L18			NOT USED		
L19	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L20	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L21	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L22	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L23	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L24	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L25	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L26	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L27	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L28	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L29	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L30	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L31	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L32	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L33	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L34	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
Q1	294172-001	24	TRANSISTOR:NPN SI	04713	MPS918
Q2	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q3	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q4	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6	294153-001	8	TRANSISTOR:PNP SI	04713	2N4126
Q7	294153-001		TRANSISTOR:PNP SI	04713	2N4126

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A1Q8	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q9	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q10	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q11	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q12	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q13	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q14	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q15	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q16	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q17	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q18	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q19	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q20	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q21	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q22	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q23	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q24	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q25	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q26	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q27	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q28	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q29	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q30	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q31	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q32	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q33	294151-001	3	TRANSISTOR:NPN SI	04713	2N4124
Q34	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q35	294151-001		TRANSISTOR:NPN SI	04713	2N4124
R1	299701-470	6	RESISTOR:FXD CAR 47 OHM +5% 1/4 W	01121	RC07GF470J
R2			NOT USED		
R3	299701-102	12	RESISTOR:FXD CAR 1K +5% 1/4 W	01121	RC07GF102J
R4	299701-102		RESISTOR:FXD CAR 1K +5% 1/4 W	01121	RC07GF102J
R5	299701-471	5	RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R6	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R7	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R8	299701-472	4	RESISTOR:FXD CAR 4.7K +5% 1/4W	01121	RC07GF472J
R9	299701-152	12	RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R10	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R11	299701-103	4	RESISTOR:FXD CAR 10K +5% 1/4W	01121	RC07GF103J
R12	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R13	299701-681	6	RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R14	299701-101	2	RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R15	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R16			NOT USED		
R17	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R18	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R19	299701-471		RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R20			NOT USED		
R21	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R22	299701-472		RESISTOR:FXD CAR 4.7K +5% 1/4W	01121	RC07GF472J
R23	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R24	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R25	299701-103		RESISTOR:FXD CAR 10K +5% 1/4W	01121	RC07GF103J
R26	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R27	299701-622	5	RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R28	299701-681		RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R29	299701-301	1	RESISTOR:FXD CAR 300 OHM +5% 1/4W	01121	RC07GF301J
R30	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R31			NOT USED		
R32	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R33	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R34	299701-471		RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A1R35			NOT USED		
R36	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R37	299701-472		RESISTOR:FXD CAR 4.7K +5% 1/4W	01121	RC07GF472J
R38	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R39	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R40	299701-103		RESISTOR:FXD CAR 10K +5% 1/4W	01121	RC07GF103J
R41	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R42	299701-622		RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R43	299701-681		RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R44	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R45	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R46			NOT USED		
R47	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R48	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R49	299701-471		RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R50	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R51	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R52	299701-472		RESISTOR:FXD CAR 4.7K +5% 1/4W	01121	RC07GF472J
R53	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R54	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R55	299701-103		RESISTOR:FXD CAR 10K +5% 1/4W	01121	RC07GF103J
R56	299701-152		RESISTOR:FXD CAR 1.5K +5% 1/4W	01121	RC07GF152J
R57	299701-681		RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R58	299701-622		RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R59	299701-681		RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R60	299701-681		RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R61	299701-471		RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R62	299701-362	2	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R63	299701-391	4	RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R64	299701-242	2	RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R65	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R66	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R67	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R68	299701-242		RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R69	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R70	299701-622		RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R71	299701-622		RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R72	299701-100	2	RESISTOR:FXD CAR 10 OHM +5% 1/4W	01121	RC07GF100J
R73	299701-100		RESISTOR:FXD CAR 10 OHM +5% 1/4W	01121	RC07GF100J
TP1	293199-001	1	TEST POINT	00779	2-582118-0
U1	293355-001	4	IC:LIN MIXER	01295	SN76514N
U2	293350-001	3	IC:TTL DUAL J-K FF	01295	SN74S113N
U3	293355-001		IC:LIN MIXER	01295	SN76514N
U4	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U5	293355-001		IC:LIN MIXER	01295	SN76514N
U6	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U7	293355-001		IC:LIN MIXER	01295	SN76514N
U8	296674-001	1	IC:TTL DECADE COUNTER	01295	SN74S196N
XU1	294573-001	8	SOCKET, IC, 14 PIN	01295	C931410
XU2	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU3	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU4	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU5	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU6	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU7	294573-001		SOCKET, IC, 14 PIN	01295	C931410
XU8	294573-001		SOCKET, IC, 14 PIN	01295	C931410
1A2A2	299214-001	3	BCD FIXED TUNED 10 TO 100 HZ (FIGURE 4-16)	56872	299214-001
C1	299243-001	11	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C2	299244-001	26	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C3	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C4	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A2C5	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C6	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C7	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C8	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C9	299241-200	6	CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C10	299241-101	1	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C11	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C12	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C13	299241-430	4	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C14	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C15	299244-001		CAP:FXD CER DISC .01UF -20+60% 1000WVDC	56289	5HKS-S10
C16	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C17	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C18	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C19	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C20	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C21	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C22	299241-100	6	CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C23	299241-680	3	CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C24	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C25	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C26	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C27	244241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C28	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C29	299250-131	3	CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C30	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C31	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C32	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C33	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C34	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C35	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C36	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C37	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C38	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C39	299241-120	2	CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C40	299241-750	1	CAP:FXD DIP MICA 75PF +5% 300WVDC	72136	DM5-750J
C41	299241-120		CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C42	294075-001	2	CAP:FXD CER .1UF -20% 50WVDC	72982	8121-050-651-104M
C43	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C44	299250-241	3	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C45	299250-151	1	CAP:FXD DIP MICA 150PF +5% 500WVDC	14655	CM04FD151J03
C46	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C47	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C48	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C49	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C50	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C51	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C52	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C53	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M
C54	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C55	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C56	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C57	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C58	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C59	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C60	294075-001		CAP:FXD CER .1UF -20% 50WVDC	72982	8121-050-651-104M
C61	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C62	299241-270	1	CAP:FXD DIP MICA 27PF +5% 300WVDC	72136	DM5-270J
C63	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C64	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C65	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C66	299243-001		CAP:FXD CER DISC .001UF -20% 1000WVDC	56289	CK60AW102M

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A2C67			NOT USED		
C68			NOT USED		
C69			NOT USED		
C70			NOT USED		
C71			NOT USED		
C72			NOT USED		
C73			NOT USED		
C74			NOT USED		
C75	299240-002	1	CAP:FXD DIP TA 22UF $\pm 20\%$ 15WVDC	31433	T368B226M015AS
C76	299240-001	1	CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
C77	299244-001		CAP:FXD CER DISC .01UF $\pm 20+80\%$ 1000WVDC	56289	5HKS-S10
C78	299244-001		CAP:FXD CER DISC .01UF $\pm 20+80\%$ 1000WVDC	56289	5HKS-S10
C79	299250-241		CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03
C80	299241-430		CAP:FXD DIP MICA 43PF $\pm 5\%$ 300WVDC	72136	DM5-430J
CR1	299251-001	8	DIODE:SIGNAL	72314	IN4009
CR2	299251-001		DIODE:SIGNAL	72314	IN4009
CR3	299251-001		DIODE:SIGNAL	72314	IN4009
CR4	299251-001		DIODE:SIGNAL	72314	IN4009
CR5	299251-001		DIODE:SIGNAL	72314	IN4009
CR6	299251-001		DIODE:SIGNAL	72314	IN4009
CR7	299251-001		DIODE:SIGNAL	72314	IN4009
CR8	299251-001		DIODE:SIGNAL	72314	IN4009
E1	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-026	4	INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L2	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L3	299237-038	9	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L4	299237-032	4	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L5	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L6	299237-022	4	INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L7	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L8	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L9	299237-028	2	INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L10	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L11	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L12	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L13	299237-024	6	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L14	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L15	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L16	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L17	299237-020	2	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L18			NOT USED		
L19	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L20	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L21	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L22	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L23	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L24	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L25	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L26	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L27	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L28	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L29	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L30	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L31			NOT USED		
L32			NOT USED		
L33	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L34	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
Q1	294172-001	24	TRANSISTOR:NPN SI	04713	MPS918
Q2	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q3	294172-001		TRANSISTOR:NPN SI	04713	MPS918

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A2Q4	294172-001	8	TRANSISTOR:NPN SI	04713	MPS918
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q7	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q8	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q9	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q10	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q11	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q12	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q13	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q14	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q15	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q16	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q17	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q18	294172-001		TRANSISTOR:PNP SI	04713	MPS918
Q19	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q20	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q21	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q22	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q23	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q24	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q25	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q26	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q27	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q28	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q29	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q30	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q31	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q32	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q33			NOT USED		
Q34			NOT USED		
Q35	294151-001	1	TRANSISTOR:NPN SI	04713	2N4124
R1	299701-470	6	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R2		12	NOT USED		
R3	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R4	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R5	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R6	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R7	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R8	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R9	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R10	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R11	299701-103		RESISTOR:FXD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R12	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R13	299701-681		RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R14	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R15	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R16			NOT USED		
R17	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R18	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R19	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R20			NOT USED		
R21	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R22	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R23	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R24	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R25	299701-103		RESISTOR:FXD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R26	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R27	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R28	299701-681		RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R29	299701-301		RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R30	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A2R31			NOT USED		
R32	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R33	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R34	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R35			NOT USED		
R36	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R37	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R38	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R39	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R40	299701-103		RESISTOR:FXD CAR 10K $\pm$ 5% 1/4W	01121	RC07GF103J
R41	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R42	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R43	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R44	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R45	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R46			NOT USED		
R47	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R48	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R49	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R50	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R51	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R52	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R53	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R54	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R55	299701-103		RESISTOR:FXD CAR 10K $\pm$ 5% 1/4W	01121	RC07GF103J
R56	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R57	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R58	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R59	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R60	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R61	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R62			NOT USED		
R63			NOT USED		
R64			NOT USED		
R65			NOT USED		
R66			NOT USED		
R67			NOT USED		
R68			NOT USED		
R69			NOT USED		
R70	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R71	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R72	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R73	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
TP1	293199-001	1	TEST POINT	00779	2-582118-0
U1	293355-001	4	IC:LIN MIXER	01295	SN76514N
U2	293350-001	3	IC:TTL DUAL J-K FF	01295	SN74S113N
U3	293355-001		IC:LIN MIXER 1	01295	SN76514N
U4	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U5	293355-001		IC:LIN MIXER	01295	SN76514N
U6	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U7	293355-001		IC:LIN MIXER	01295	SN76514N
U8	296674-001	1	IC:TTL DECADE COUNTER	18324	SN74S196N
XU1	294573-001	8	SOCKET:IC 14 PIN	01295	C931410
XU2	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU3	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU4	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU5	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU6	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU7	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU8	294573-001		SOCKET:IC 14 PIN	01295	C931410

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A2A3	299214-001		SAME AS A2A2	56872	299214-001
1A2A4	299214-001		SAME AS A2A2	56872	299214-001
1A2A5	299225-001	1	LOWER ORDER BCD JUMPER BOARD	56872	299225-001
1A2A6	299203-001	1	BCD FIXED TUNED INTERCONNECTING (FIGURE 4-11)	56872	299203-001
C1	299244-001	8	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C2	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C3	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C4	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C5	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C6	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C7	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
C8	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	5HKS-S10
J1	299235-001	4	CONNECTOR:RT ANGLE PC BD	98291	700214
J2	299235-001		CONNECTOR:RT ANGLE PC BD	98291	700214
J3	299235-001		CONNECTOR:RT ANGLE PC BD	98291	700214
J4	299235-001		CONNECTOR:RT ANGLE PC BD	98291	700214
J6	294406-001	5	CONNECTOR:22 PIN DUAL EDGE	91662	00-6007-044-451-018
J7	294406-001		CONNECTOR:22 PIN DUAL EDGE	91662	00-6007-044-451-018
J8	294406-001		CONNECTOR:22 PIN DUAL EDGE	91662	00-6007-044-451-018
J9	294406-001		CONNECTOR:22 PIN DUAL EDGE	91662	00-6007-044-451-018
J10	294406-001		CONNECTOR:22 PIN DUAL EDGE	91662	00-6007-044-451-018
J11	299932-001		HEADER:DOUBLE ROW STRAIGHT POST 26 POS	00779	1-87227-3
1A2A7	299220-001	2	BCD DISTRIBUTION PC BOARD	56872	299220-001
J1	299933-001	1	HEADER:RT ANGLE 26 PIN	00779	1-87230-3
1A2A8	299220-001		SAME AS A2A7		
1A4	298934-001	1	HIGHER ORDER BCD, ASSEMBLY (FIGURE 4-17)	56872	298934-001
FL1	293608-001	12	FILTER CONNECTOR	72982	1201-066
FL2	293608-001		FILTER CONNECTOR	72982	1201-066
FL3	293608-001		FILTER CONNECTOR	72982	1201-066
FL4	293608-001		FILTER CONNECTOR	72982	1201-066
FL5	293608-001		FILTER CONNECTOR	72982	1201-066
FL6	293608-001		FILTER CONNECTOR	72982	1201-066
FL7	293608-001		FILTER CONNECTOR	72982	1201-066
FL8	293608-001		FILTER CONNECTOR	72982	1201-066
FL9	293608-001		FILTER CONNECTOR	72982	1201-066
FL10	293608-001		FILTER CONNECTOR	72982	1201-066
FL11	293608-001		FILTER CONNECTOR	72982	1201-066
FL12	293608-001		FILTER CONNECTOR	72982	1201-066
1A4A1	298904-001	1	BCD NO. 1 PC BOARD (FIGURE 4-19)	56872	298904-001
C1	299241-430	2	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C2	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C3	299241-101	2	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C4	299250-241	2	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C5	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C6	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C7	299245-002	6	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C8	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C9	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C10	299250-391	2	CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C11	299250-181	2	CAP:FXD DIP MICA 180PF +5% 500WVDC	14655	CM04FD181J03
C12	299250-131	2	CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C13	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C14	299250-181		CAP:FXD DIP MICA 180PF +5% 500WVDC	14655	CM04FD181J03
C15	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A1C16	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C17	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C18	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
E1	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E2	293306-001	2	TERMINAL:DISCONNECT	71279	1019-2-901
E3	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293310-001		TERMINAL SOLDER	71279	1597-2-01
J1	299235-001	1	CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	299237-008	1	INDUCTOR:FXD MOLDED .33UH	99800	1025-08
L2	231105-003	2	INDUCTOR:VAR .44UH	56872	231105-003
L3	299237-032	2	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L4	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L5	299237-048	2	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L6	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L7	231105-004	4	INDUCTOR:VAR .9UH	56872	231105-004
L8	299237-038	2	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L9	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L10	299237-044	1	INDUCTOR:FXD MOLDED 10.0UH	99800	1025-044
L11	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L12	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L13	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L14	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
M1	231104-001	1	MIXER	15542	SRA-1
Q1	294172-001	1	TRANSISTOR:NPN SI	04713	MPS918
R1	299701-301	4	RESISTOR, 300 OHM +5% 1/4W	01121	RC07GF301J
R2	299701-180	2	RESISTOR, 18 OHM +5% 1/4W	01121	RC07GF180J
R3	299701-301		RESISTOR, 300 OHM +5% 1/4W	01121	RC07GF301J
R4	299701-301		RESISTOR, 300 OHM +5% 1/4W	01121	RC07GF301J
R5	299701-180		RESISTOR, 18 OHM +5% 1/4W	01121	RC07GF180J
R6	299701-301		RESISTOR, 300 OHM +5% 1/4W	01121	RC07GF301J
R7	299701-362	1	RESISTOR, 3.6K, +5% 1/4W	01121	RC07GF362J
R8	299701-242	1	RESISTOR, 2.4K, +5% 1/4W	01121	RC07GF242J
R9	299701-391	2	RESISTOR, 390 OHM +5% 1/4W	01121	RC07GF391J
R10	299701-391		RESISTOR, 390 OHM, +5% 1/4W	01121	RC07GF391J
R11	299701-471	1	RESISTOR, 470 OHM, +5% 1/4W	01121	RC07GF471J
R12	299701-101	1	RESISTOR, 100 OHM, +5% 1/4W	01121	RC07GF101J
U1	293350-001	1	IC:TTL DUAL J-K FF	01295	SN74S113N
XU1	294573-001	1	SOCKET, 14 PIN	01295	C931410
1A4A2	298905-001	1	BCD NO. 2 PC BOARD (FIGURE 4-20)	56872	298905-001
C1	299241-101	6	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C2	299250-301	3	CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C3	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C4	299250-241	2	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C5	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C6	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C7	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C8	299245-002	6	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C9	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C10	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C11	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C12	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C13	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C14	299250-151	2	CAP:FXD DIP MICA 150PF +5% 500WVDC	14655	CM04FD151J03
C15	299250-301		CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C16	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C17	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C18	299250-151		CAP:FXD DIP MICA 150PF +5% 500WVDC	14655	CM04FD151J03
C19	299250-301		CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
E1	293305-001	3	TERMINAL:DISCONNECT	71279	1019-2-901

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A2E2	293310-001	5	TERMINAL SOLDER	71279	1597-2-01
E3	293306-001		TERMINAL SOLDER	71279	1019-2-901
E4	293306-001		TERMINAL SOLDER	71279	1019-2-901
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293310-001		TERMINAL SOLDER	71279	1597-2-01
E7	293310-001		TERMINAL SOLDER	71279	1597-2-01
E8	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-016	2	INDUCTOR: FXD MOLDED .68UH	99800	1025-016
L2	299237-016		INDUCTOR: FXD MOLDED .68UH	99800	1025-016
L3	231105-001	2	INDUCTOR: VAR .133UH	56872	231105-001
L4	299237-024	1	INDUCTOR: FXD MOLDED 1.5UH	99800	1025-024
L5	231105-001		INDUCTOR: VAR .133UH	56872	231105-001
L6	299237-020	1	INDUCTOR: FXD MOLDED 1.00UH	99800	1025-020
L7	299237-042	3	INDUCTOR: FXD MOLDED 8.2UH	99800	1025-042
L8	231105-003	4	INDUCTOR: VAR .44UH	56872	231105-003
L9	299237-038	2	INDUCTOR: FXD MOLDED 5.6UH	99800	1025-038
L10	231105-003		INDUCTOR: VAR .44UH	56872	231105-003
L11	299237-042		INDUCTOR: FXD MOLDED 8.2UH	99800	1025-042
L12	231105-003		INDUCTOR: VAR .44UH	56872	231105-003
L13	299237-038		INDUCTOR: FXD MOLDED 5.6UH	99800	1025-038
L14	231105-003		INDUCTOR: VAR .44UH	56872	231105-003
L15	299237-042		INDUCTOR: FXD MOLDED 8.2UH	99800	1025-042
M1	231104-001	1	MIXER	15542	SRA-1
Q1	294172-001	1	TRANSISTOR: NPN SI	04713	MPS918
R1	299701-161	2	RESISTOR: FXD CAR 160 OHM $\pm 5\%$ 1/4 W	01121	RC07GF161J
R2	299701-470	1	RESISTOR: FXD CAR 47 OHM $\pm 5\%$ 1/4 W	01121	RC07GF470J
R3	299701-161		RESISTOR: FXD CAR 160 OHM $\pm 5\%$ 1/4 W	01121	RC07GF161J
R4	299701-301	2	RESISTOR: FXD CAR 300 OHM $\pm 5\%$ 1/4 W	01121	RC07GF301J
R5	299701-180	1	RESISTOR: FXD CAR 18 OHM $\pm 5\%$ 1/4 W	01121	RC07GF180J
R6	299701-301		RESISTOR: FXD CAR 300 OHM $\pm 5\%$ 1/4 W	01121	RC07GF301J
R7	299701-362	1	RESISTOR: FXD CAR 3.6K $\pm 5\%$ 1/4 W	01121	RC07GF362J
R8	299701-242	1	RESISTOR: FXD CAR 2.4K $\pm 5\%$ 1/4 W	01121	RC07GF242J
R9	299701-391	2	RESISTOR: FXD CAR 390 OHM $\pm 5\%$ 1/4 W	01121	RC07GF391J
R10	299701-391		RESISTOR: FXD CAR 390 OHM $\pm 5\%$ 1/4 W	01121	RC07GF391J
R11	299701-471	1	RESISTOR: FXD CAR 470 OHM $\pm 5\%$ 1/4 W	01121	RC07GF 471J
R12	299701-101	1	RESISTOR: FXD CAR 100 OHM $\pm 5\%$ 1/4 W	01121	RC07GF101J
U1	293350-001	1	IC: TTL DUAL J-K FF	01295	SN74S113N
XU1	294573-001	1	SOCKET: IC 14 PIN	01295	C931410
1A4A3	298906-001	1	BCD NO. 4 PC BOARD (FIGURE 4-21)	56872	298906-001
C1	299241-680	2	CAP: FXD DIP MICA 68PF $\pm 5\%$ 300WVDC	72136	DM5-680J
C2	299250-241	1	CAP: FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM06FD241J03
C3	299241-680		CAP: FXD DIP MICA 68PF $\pm 5\%$ 300WVDC	72136	DM5-680J
C4	299250-181	4	CAP: FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C5	299241-101	2	CAP: FXD DIP MICA 100PF $\pm 5\%$ 300WVDC	72136	DM5-101J
C6	299241-750	1	CAP: FXD DIP MICA 75PF $\pm 5\%$ 300WVDC	72136	DM5-750J
C7	299241-101		CAP: FXD DIP MICA 100PF $\pm 5\%$ 300WVDC	72136	DM5-101J
C8	299250-181		CAP: FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C9	299245-002	6	CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C10	299245-002		CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C11	299245-002		CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C12	299245-002		CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	7121-M058-651-103M
C13	299241-100	1	CAP: FXD CER MICA 10PF $\pm 0.5\%$ 300WVDC	72136	DM5-100J
C14	299245-002		CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C15	299245-002		CAP: FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C16	299250-301	2	CAP: FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C17	299250-391	2	CAP: FXD DIP MICA 390PF $\pm 5\%$ 100WVDC	14655	CM04FA391J03
C18	299250-181		CAP: FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C19	299250-181		CAP: FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C20	299250-301		CAP: FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C21	299250-391		CAP: FXD DIP MICA 390PF $\pm 5\%$ 100WVDC	14655	CM04FA391J03

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A3E1	293306-001	4	TERMINAL:DISCONNECT	71279	1019-2-901
E2	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E3	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E7	293306-001		TERMINAL DISCONNECT	71279	1019-2-901
E8	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-012	2	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L3	231105-002	3	INDUCTOR:VAR .27UH	56872	231105-002
L4	299237-032	4	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L5	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L6	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L7	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L8	299237-048	2	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L9	299237-020	1	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L10	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L11	231105-003	4	INDUCTOR:VAR .44UH	56872	231105-003
L12	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L13	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L14	299237-038	1	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L15	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L16	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L17	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
M1	231104-001	1	MIXER	15542	SRA-1
Q1	294172-001	1	TRANSISTOR:NPN SI	04713	MPS918
R1	299701-101	3	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R2	299701-470	1	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R3	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R4	299701-301	2	RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R5	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R6	299701-301		RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R7	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R8	299701-242	1	RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R9	299701-391	2	RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R10	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R11	299701-471	1	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R12	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
U1	293350-001	1	IC:TTL DUAL J-K FF	01295	SN74S113N
XU1	294573-001	1	SOCKET, 14 PIN	01295	C932410
1A4A4	298907-001	1	BCD 8 NO. 1 PC BOARD (FIGURE 4-22)	56872	298907-001
C1	299241-101	2	CAP:FXD DIP MICA 100PF $\pm 5\%$ 300WVDC	72136	DM5-101J
C2	299241-101		CAP:FXD DIP MICA 100PF $\pm 5\%$ 300WVDC	72136	DM5-101J
C3	299241-680	2	CAP:FXD DIP MICA 68PF $\pm 5\%$ 300WVDC	72136	DM5-680J
C4	299250-181	2	CAP:FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C5	299241-470	2	CAP:FXD DIP MICA 47PF $\pm 5\%$ 300WVDC	72136	DM5-470J
C6	299241-470		CAP:FXD DIP MICA 47PF $\pm 5\%$ 300WVDC	72136	DM5-470J
C7	299241-680		CAP:FXD DIP MICA 68PF $\pm 5\%$ 300WVDC	72136	DM5-680J
C8	299250-181		CAP:FXD DIP MICA 180PF $\pm 5\%$ 500WVDC	14655	CM04FD181J03
C9	299245-002	4	CAP:FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C10	299245-002		CAP:FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C11	299245-002		CAP:FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
C12	299245-002		CAP:FXD CER .01UF $\pm 20\%$ 50WVDC	72982	8121-M058-651-103M
E1	293310-001	7	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293310-001		TERMINAL SOLDER	71279	1597-2-01
E7	293310-001		TERMINAL SOLDER	71279	1597-2-01

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A4L1	299237-012	1	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	231105-002	4	INDUCTOR:VAR .27UH	56872	231105-002
L3	299237-032	2	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L4	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L5	299237-038	2	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L6	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L7	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L8	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L9	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
M1	231104-001	1	MIXER	15542	SRA-1
Q1	294172-001	1	TRANSISTOR:NPN SI	04713	MP5918
R1	299701-101	2	RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R2	299701-680	1	RESISTOR:FXD CAR 68 OHM $\pm$ 5% 1/4W	01121	RC07GF680J
R3	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R4	299701-301	2	RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
R5	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm$ 5% 1/4 W	01121	RC07GF180J
R6	299701-301		RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
R7	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm$ 5% 1/4W	01121	RC07GF362J
R8	299701-242	1	RESISTOR:FXD CAR 2.4K $\pm$ 5% 1/4W	01121	RC07GF242J
R9	299701-391	2	RESISTOR:FXD CAR 390 OHM $\pm$ 5% 1/4W	01121	RC07GF391J
R10	299701-391		RESISTOR:FXD CAR 390 OHM $\pm$ 5% 1/4W	01121	RC07GF391J
	294550-001	8	SOCKET:PIN	00779	1-331677-8
1A4A5	298908-001	1	BCD 8 NO. 2 PC BOARD (FIGURE 4-24)	56872	298908-001
C1	299250-181	2	CAP:FXD DIP MICA 180PF $\pm$ 5% 500WVDC	14655	CM04FD181J03
C2	299241-680	2	CAP:FXD DIP MICA 68PF $\pm$ 5% 300WVDC	72136	DM5-680J
C3	299241-680		CAP:FXD DIP MICA 68PF $\pm$ 5% 300WVDC	72136	DM5-680J
C4	299250-181		CAP:FXD DIP MICA 180PF $\pm$ 5% 500WVDC	14655	CM04FD181J03
C5	299245-002	12	CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C6	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C7	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C8	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C9	299245-001	4	CAP:FXD CER .1UF $\pm$ 20% 50WVDC	72982	8121-M058-W5R0-104M
C10	299245-001		CAP:FXD CER .1UF $\pm$ 20% 50WVDC	72982	8121-M058-W5R0-104M
C11	299240-002	1	CAP:FXD DIP TA 22UF $\pm$ 20% 15WVDC	31433	T368B226M015AS
C12	299245-001		CAP:FXD CER .1UF $\pm$ 20% 50WVDC	72982	8121-M058-W5R0-104M
C13	299250-471	2	CAP:FXD DIP MICA 470PF $\pm$ 5% 500WVDC	14655	CM06FD471J03
C14	299250-132	2	CAP:FXD DIP MICA 1300PF $\pm$ 5% 500WVDC	14655	CM06FD132J03
C15	299250-331	3	CAP:FXD DIP MICA 330PF $\pm$ 5% 100WVDC	14655	CM04FA331J03
C16	299241-070	2	CAP:FXD DIP MICA 7PF $\pm$ 0.5PF 300WVDC	72136	DM5-070D
C17	299250-331		CAP:FXD DIP MICA 330PF $\pm$ 0.5PF 100WVDC	72136	CM04FA331J03
C18	299250-331		CAP:FXD DIP MICA 330PF $\pm$ 0.5PF 100WVDC	72136	CM04FA331J03
C19	299241-070		CAP:FXD DIP MICA 7PF $\pm$ 0.5PF 300WVDC	72136	DM5-070D
C20	299250-471		CAP:FXD DIP MICA 470PF $\pm$ 5% 500WVDC	14655	CM06FD471J03
C21	299250-132		CAP:FXD DIP MICA 1300PF $\pm$ 5% 500WVDC	14655	CM06FD132J03
C22	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C23	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C24	299250-241	3	CAP:FXD DIP MICA 240PF $\pm$ 5% 500WVDC	14655	CM04FD241J03
C25	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C26	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C27	299250-241		CAP:FXD DIP MICA 240PF $\pm$ 5% 500WVDC	14655	CM04FD241J03
C28	299250-391	2	CAP:FXD DIP MICA 390PF $\pm$ 5% 100WVDC	14655	CM04FA391J03
C29	299250-151	1	CAP:FXD DIP MICA 150PF $\pm$ 5% 500WVDC	14655	CM04FD151J03
C30	299250-241		CAP:FXD DIP MICA 240PF $\pm$ 5% 500WVDC	14655	CM04FD241J03
C31	299250-391		CAP:FXD DIP MICA 390PF $\pm$ 5% 100WVDC	14655	CM04FA391J03
C32	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C33	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C34	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C35	299241-430	2	CAP:FXD DIP MICA 43PF $\pm$ 5% 300WVDC	72136	DM5-430J
C36	299241-430		CAP:FXD DIP MICA 43PF $\pm$ 5% 300WVDC	72136	DM5-430J
C37	299240-001	1	CAP:FXD DIP TA 6.8UF $\pm$ 20% 35WVDC	31433	T368B685M035AS
C38	299245-001		CAP:FXD CER .1UF $\pm$ 20% 50WVDC	72982	8121-M058-W5R0-104M
C39	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A5E1	293310-001	2	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
J1	299235-001	1	CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	231105-002	2	INDUCTOR:VAR .27UH	56872	231105-002
L2	231105-002		INDUCTOR:VAR .27UH	56872	231105-002
L3	299237-038	3	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L4	299237-048	7	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L5	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L6	299237-032	3	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L7	231105-004	5	INDUCTOR:VAR .9UH	56872	231105-004
L8	299237-056	2	INDUCTOR:FXD MOLDED 33UH	99800	1025-056
L9	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L10	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L11	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L12	299237-056		INDUCTOR:FXD MOLDED 33UH	99800	1025-056
L13	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L14	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L15	231105-001	3	INDUCTOR:VAR .133UH	56872	231105-001
L16	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L17	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L18	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L19	299237-008	1	INDUCTOR:FXD MOLDED .33UH	99800	1025-08
L20	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L21	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L22	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L23	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L24	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L25	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L26	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
Q1	294172-001	2	TRANSISTOR:NPN SI	04713	MPS918
Q2	294158-001	1	TRANSISTOR:PNP SI	04713	2N4403
Q3	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
R1	299701-362	3	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R2	299701-242	3	RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R3	299701-391	4	RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R4	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R5	299701-681	1	RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R6	299701-102	2	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R7	299701-101	3	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R8	299701-301	1	RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R9	299701-362		RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R10	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R11	299701-471	1	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R12	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R13	299701-622	1	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R14	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R15	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R16	299701-201	1	RESISTOR:FXD CAR 200 OHM $\pm 5\%$ 1/4W	01121	RC07GF201J
R17	299701-362		RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R18	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R19	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R20	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R21	299701-680	2	RESISTOR:FXD CAR 68 OHM $\pm 5\%$ 1/4W	01121	RC07GF680J
R22	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R23	299701-680		RESISTOR:FXD CAR 68 OHM $\pm 5\%$ 1/4W	01121	RC07GF680J
U1	296674-001	1	IC:TTL DECADE COUNTER	18324	SN74S196N
XU1	294573-001	1	SOCKET:IC 14 PIN	01295	C931410
1A4A6	298909-001	1	BUFFER AMPLIFIER PC BOARD (FIGURE 4-26)	56872	298909-001
C1	299243-001	4	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A6C2	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C3	299245-002	4	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C4	299241-820	2	CAP:FXD DIP MICA 82PF +5% 300WVDC	72136	DM5-820J
C5	299241-101	2	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C6	299241-560	2	CAP:FXD DIP MICA 56PF +5% 300WVDC	72136	DM5-560J
C7	299250-241	2	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C8	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C9	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C10	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C11	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C12	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C13	299241-820		CAP:FXD DIP MICA 82PF +5% 300WVDC	72136	DM5-820J
C14	299241-101		CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C15	299241-560		CAP:FXD DIP MICA 56PF +5% 300WVDC	72136	DM5-560J
C16	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
E1	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293306-001	1	TERMINAL:DISCONNECT	71279	1019-2-901
J2	299235-001	4	CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J3	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J4	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J5	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	299237-038	5	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L2	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L3	231105-001	4	INDUCTOR:VAR .133UH	56872	231105-001
L4	299237-034	2	INDUCTOR:FXD MOLDED 3.9UH	99800	1025-034
L5	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L6	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L7	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L8	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L9	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L10	299237-034		INDUCTOR:FXD MOLDED 3.9UH	99800	1025-034
L11	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
Q1	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-101	6	RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R2			NOT USED		
R3	299701-362	2	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R4	299701-242	2	RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R5	299701-102	2	RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R6	299701-471	2	RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R7	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R8	299701-180	2	RESISTOR:FXD CAR 18 OHM +5% 1/4W	01121	RC07GF180J
R9	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R10	299701-242		RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R11	299701-471		RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
R12	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R13			NOT USED		
R14	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R15	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R16	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R17	299701-180		RESISTOR:FXD CAR 18 OHM +5% 1/4W	01121	RC07GF180J
R18	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
1A4A7	298910-001	4	64/65 MHZ SWITCH PC BOARD (FIGURE 4-27)	56872	298910-001
C1	299245-002	5	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C2	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C3			NOT USED		
C4	299243-001	2	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C5	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A7C6			NOT USED		
C7	299871-391	1	CAP:FXD CER 390PF $\pm$ 10% 200WVDC	56289	CK058X391K
C8	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C9	299245-002		CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-103M
C10	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C11	299241-101	1	CAP:FXD DIP MICA 100PF $\pm$ 5% 300WVDC	72136	DM5-101J
C12	299241-750	1	CAP:FXD DIP MICA 75PF $\pm$ 5% 300WVDC	72136	DM5-740J
C13	299241-560	1	CAP:FXD DIP MICA 56PF $\pm$ 5% 300WVDC	72136	DM5-560J
C14	299250-241	1	CAP:FXD DIP MICA 240PF $\pm$ 5% 500WVDC	14655	CM04FD241J03
CR1	299251-001	2	DIODE:SIGNAL	72314	IN4009
CR2	299251-001		DIODE:SIGNAL	72314	IN4009
E1	293306-001	8	TERMINAL:DISCONNECT	71279	1019-2-901
E2	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E4	243306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E5	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E6	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E7	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E8	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E9	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
L1	299237-038	4	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L2	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L3	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L4	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L5	231105-001	2	INDUCTOR:VAR .133UH	56872	231105-001
L6	299237-032	1	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L7	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
Q1	294172-001	5	TRANSISTOR:NPN SI	04713	MPS918
Q2	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q3	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q4	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6			NOT USED		
Q7	294153-001	2	TRANSISTOR:PNP SI	04713	2N4126
Q8	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q9	299239-001	1	TRANSISTOR:NPN SI	04713	2N5179
R1	299701-101	4	RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R2	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R3	299701-102	4	RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R4	299701-681	2	RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R5	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R6	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R7	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R8	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R9	299701-152	3	RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R10	299701-472	1	RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R11			NOT USED		
R12	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R13	299701-103	1	RESISTOR:FXD CAR 10K $\pm$ 5% 1/4W	01121	RC07GF103J
R14	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R15	299701-242	1	RESISTOR:FXD CAR 2.4K $\pm$ 5% 1/4W	01121	RC07GF242J
R16	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm$ 5% 1/4W	01121	RC07GF362J
R17	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R18	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
1A4A8	298910-001		SAME AS A4A7	56872	298910-001
1A4A9	298910-001		SAME AS A4A7	56872	298910-001
1A4A10	298910-001		SAME AS A4A7	56872	298910-001

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A11	299248-001	1	BCD FIXED TUNED 10 KHZ PC BOARD (FIGURE 4-29)	56872	299248-001
C1	299243-001	35	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C2	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C3	299241-060	4	CAP:FXD DIP MICA 6PF +0.5PF 300WVDC	72136	DM5-060D
C4	299241-200	6	CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C5	299241-101	1	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C6	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C7	299244-001	5	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C8	299241-430	6	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C9	299250-241	3	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C10	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C11	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C12	299241-100	6	CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C13	299241-060		CAP:FXD DIP MICA 6PF +0.5PF 300WVDC	72136	DM5-060D
C14	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C15	299241-680	3	CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C16	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C17	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C18	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C19	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C20	299250-131	3	CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C21	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C22	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C23	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C24	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C25	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C26	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C27	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C28	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C29	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C30	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C31	299241-060		CAP:FXD DIP MICA 6PF +0.5PF 300WVDC	72136	DM5-060D
C32	299241-120	2	CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C33	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C34	299241-750	1	CAP:FXD DIP MICA 75PF +5% 300WVDC	72136	DM5-750J
C35	299241-120		CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C36	299245-001	2	CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C37	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C38	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C39	299250-151	1	CAP:FXD DIP MICA 150PF +5% 500WVDC	14655	CM04FD151J03
C40	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C41	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C42	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C43	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C44	299241-060		CAP:FXD DIP MICA 6PF +0.5PF 300WVDC	72136	DM5-060D
C45	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C46	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C47	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C48	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C49	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C50	299241-100		CAP:FXD DIP MICA 10PF +0.5PF 300WVDC	72136	DM5-100J
C51	299245-001		CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C52	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C53	299241-270	1	CAP:FXD DIP MICA 27PF +5% 300WVDC	72136	DM5-270J
C54	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C55	299241-200		CAP:FXD DIP MICA 20PF +5% 300WVDC	72136	DM5-200J
C56	299250-131		CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C57	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C58	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C59	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C60	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A11C61	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C62	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C63	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C64	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C65	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C66	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C67	299241-070	4	CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C68	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C69	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C70	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C71	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C72	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C73	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C74	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C75	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C76	299240-002	1	CAP:FXD DIP TA 22UF +20% 15WVDC	31433	T368B226M015AS
C77	299240-001	1	CAP:FXD DIP TA 6.8UF +20% 35WVDC	31433	T368B685M035AS
C78	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C79	299244-001		CAP:FXD CER DISC .01UF +20+80% 1000WVDC	56289	C023F501C103Z
C80	299244-001		CAP:FXD CER DISC .01UF +20+80% 1000WVDC	56289	C023F501C103Z
C81	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C82	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C83	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C84	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C85	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
CR1	299251-001	8	DIODE:SIGNAL	72314	IN4009
CR2	299251-001		DIODE:SIGNAL	72314	IN4009
CR3	299251-001		DIODE:SIGNAL	72314	IN4009
CR4	299251-001		DIODE:SIGNAL	72314	IN4009
CR5	299251-001		DIODE:SIGNAL	72314	IN4009
CR6	299251-001		DIODE:SIGNAL	72314	IN4009
CR7	299251-001		DIODE:SIGNAL	72314	IN4009
CR8	299251-001		DIODE:SIGNAL	72314	IN4009
E1	293306-001	6	TERMINAL:DISCONNECT	71279	1019-2-901
E2	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E3	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E4	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E5	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E6	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
J7	299235-001	6	CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J8	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J9	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J10	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J11	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
J12	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	299237-020	10	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L2	299237-038	18	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L3	299237-026	4	INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L4	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L5	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L6	299237-032	4	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L7	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L8	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L9	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L10	299237-022	4	INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L11	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L12	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L13	299237-028	2	INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L14	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L15	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L16	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L17	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A11L18	299237-038	6	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L19	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L20	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L21	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L22	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L23	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L24	299237-026	6	INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L25	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L26	299237-026		INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L27	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L28	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L29	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L30	299237-024	6	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L31	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L32	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L33	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L34	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L35	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L36	299237-022	6	INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L37	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L38	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L39	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L40	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L41	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L42	299237-038	6	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L43	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L44	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L45	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L46	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L47	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L48	299237-032	4	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
M1	231104-001		MIXER	15542	SRA-1
M2	231104-001		MIXER	15542	SRA-1
M3	231104-001		MIXER	15542	SRA-1
M4	231104-001	4	MIXER	15542	SRA-1
Q1	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q2	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q3	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q4	294151-001	20	TRANSISTOR:NPN SI	04713	2N4124
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q7	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q8	294172-001	8	TRANSISTOR:NPN SI	04713	MPS918
Q9	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q10	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q11	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q12	294172-001	8	TRANSISTOR:NPN SI	04713	MPS918
Q13	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q14	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q15	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q16	294172-001	8	TRANSISTOR:NPN SI	04713	MPS918
Q17	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q18	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q19	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q20	294151-001	8	TRANSISTOR:NPN SI	04713	2N4124
Q21	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q22	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q23	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q24	294172-001	8	TRANSISTOR:NPN SI	04713	MPS918
Q25	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q26	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q27	294172-001		TRANSISTOR:NPN SI	04713	MPS918

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A11Q28	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q29	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q30	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q31	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q32	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q33	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q34	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q35	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q36	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q37	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q38	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q39	294151-001		TRANSISTOR:NPN SI	04713	2N4124
R1	299701-622	15	RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R2	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R3	299701-301	4	RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
R4	299701-471	4	RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R5	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R6	299701-681	6	RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC06GF681J
R7	299701-101	17	RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R8	299701-470	3	RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R9	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R10	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R11	299701-301		RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
R12	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R13	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R14	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R15	299701-680	1	RESISTOR:FXD CAR 68 OHM $\pm$ 5% 1/4W	01121	RC07GF680J
R16	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R17	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R18	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R19	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R20	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R21	299701-472	6	RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R22	299701-152	14	RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R23	299701-102	18	RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R24	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R25	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R26	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R27	299701-103	4	RESISTOR:FXD CAR 10K $\pm$ 5% 1/4W	01121	RC07GF103J
R28	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R29	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R30	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R31	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R32	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R33	299701-101		RESISTOR:FXD CAR 100 OHM $\pm$ 5% 1/4W	01121	RC07GF101J
R34	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R35	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R36	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R37	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R38	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R39	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R40	299701-103		RESISTOR:FXD CAR 10K $\pm$ 5% 1/4W	01121	RC07GF103J
R41	299701-102		RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R42	299701-152		RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R43	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R44	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R45	299701-301	1	RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
R46	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R47	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R48	299701-681		RESISTOR:FXD CAR 680 OHM $\pm$ 5% 1/4W	01121	RC07GF681J
R49	299701-161	1	RESISTOR:FXD CAR 160 OHM $\pm$ 5% 1/4W	01121	RC07GF161J
R50	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A4A11R51	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R52	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R53	299701-301		RESISTOR:FxD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R54	299701-471		RESISTOR:FxD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R55	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R56	299701-681		RESISTOR:FxD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R57	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R58	299701-681		RESISTOR:FxD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R59	299701-681		RESISTOR:FxD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R60	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R61	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R62	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R63	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R64	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R65	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R66	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R67	299701-472		RESISTOR:FxD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R68	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R69	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R70	299701-103		RESISTOR:FxD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R71	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R72	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R73	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R74	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R75	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R76	299701-101		RESISTOR:FxD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R77	299701-472		RESISTOR:FxD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R78	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R79	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R80	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R81	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R82	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R83	299701-103		RESISTOR:FxD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R84	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R85	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R86	299701-100	3	RESISTOR:FxD CAR 10 OHM $\pm 5\%$ 1/4W	01121	RC07GF100J
R87	299701-100		RESISTOR:FxD CAR 10 OHM $\pm 5\%$ 1/4W	01121	RC07GF100J
R88	299701-100		RESISTOR:FxD CAR 10 OHM $\pm 5\%$ 1/4W	01121	RC07GF100J
R89	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R90	299701-622		RESISTOR:FxD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R91	299701-472		RESISTOR:FxD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R92	299701-472		RESISTOR:FxD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R93	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R94	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R95	299701-102		RESISTOR:FxD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R96	299701-152		RESISTOR:FxD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
U1	293350-001	3	IC:TTL DUAL J-K FF	01295	SN74S113N
U2	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U3	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
U4	296674-001	1	IC:TTL DECADE COUNTER	18324	SN74S196N
XU1	294573-001	4	SOCKET:IC 14 PIN	01295	C931410
XU2	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU3	294573-001		SOCKET:IC 14 PIN	01295	C931410
XU4	294573-001		SOCKET:IC 14 PIN	01295	C931410
1A5	298935-001	1	FIXED FREQUENCY GENERATOR ASSEMBLY (FIGURE 4-30)	56872	298935-001
FL1	293608-001	3	FILTER CONNECTOR	72982	1201-066
FL2	293608-001		FILTER CONNECTOR	72982	1201-066
FL3	293608-001		FILTER CONNECTOR	72982	1201-066
R1	299701-180	1	RESISTOR:FxD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A1	298921-001	1	FIXED FREQUENCY INPUT PC BOARD (FIGURE 4-32)	56872	298921-001
C1	299244-001	8	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C2	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C3	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C4	299241-270	2	CAP:FXD DIP MICA 27PF +5% 300WVDC	72136	DM5-270J
C5	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C6	299250-241	1	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C7	299241-270		CAP:FXD DIP MICA 27PF +5% 300WVDC	72136	DM5-270J
C8	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C9	299250-301	3	CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C10	299241-070	1	CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C11	299250-301		CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C12	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C13	299241-120	2	CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C14	299250-301		CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C15	299241-120		CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C16	299250-471	2	CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C17	299250-471		CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C18	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C19	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C20	299241-121	2	CAP:FXD DIP MICA 120PF +5% 300WVDC	72136	DM5FY-121J
C21	293916-001	1	CAP:CER VAR 3-10PF	91293	9352
C22	299241-121		CAP:FXD DIP MICA 120PF +5% 300WVDC	72136	DM5FY-121J
C23	299241-360	1	CAP:FXD DIP MICA 36PF +5% 300WVDC	72136	DM5EC-360J
E1	293310-001	1	TERMINAL SOLDER	71279	1597-2-01
E2	293306-001	1	TERMINAL SOLDER	71279	1019-2-901
J1	299235-001	1	CONNECTOR:RT ANGLE	98291	51-353-0000
L1	299237-042	2	INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L2	299237-042		INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L3	231105-004	4	INDUCTOR:VAR .9UH	56872	231105-004
L4	299237-056	2	INDUCTOR:FXD MOLDED 33UH	99800	1025-056
L5	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L6	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L7	299237-056		INDUCTOR:FXD MOLDED 33UH	99800	1025-056
L8	231105-004		INDUCTOR:VAR .9UH	56872	231105-004
L9	231105-006	1	INDUCTOR:VAR 2UH 8 TURNS	99800	1025-048
L10	231105-007	1	INDUCTOR:VAR 2UH 16 TURNS	99800	1025-048
Q1	294151-001	2	TRANSISTOR:NPN SI	04713	2N4124
Q2	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q3	294157-001	1	TRANSISTOR:NPN SI	04713	2N3866
R1	299701-470	3	RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R2	299701-362	6	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R3	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R4	299701-391	3	RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R5	299701-102	1	RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R6	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R7	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R8	299701-681	1	RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R9	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R10	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R11	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R12	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R13	299701-201	1	RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF201J
R14	299701-301	1	RESISTOR:FXD CAR 300 OHM +5% 1/4W	01121	RC07GF301J
R15	299701-470		RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
Y1	298357-001	1	CRYSTAL:10 MHZ	56872	298357-001
1A5A2	298918-001	1	10 MHZ OUTPUT AMPLIFIER PC BOARD (FIGURE 4-33)	56872	298918-001
C1	299241-360	4	CAP:FXD DIP MICA 36PF +5% 300WVDC	72136	DM5-360J
C2	299250-241	2	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C3	299241-360		CAP:FXD DIP MICA 36PF +5% 300WVDC	72136	DM5-360J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A2C4	299244-001	6	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C5	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C6	299241-360		CAP:FXD DIP MICA 36PF +5% 300WVDC	72136	DM5-360J
C7	299241-360		CAP:FXD DIP MICA 36PF +5% 300WVDC	72136	DM5-360J
C8	299250-241		CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C9	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C10	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C11	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C12	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
E1	293310-001	2	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
J2	299235-001	2	CONNECTOR:RT ANGLE	98291	51-353-0000
J3	299235-001		CONNECTOR:RT ANGLE	98291	51-353-0000
L1	299237-042	4	INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L2	299237-042		INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L3	299237-056	2	INDUCTOR:FXD MOLDED 33UH	99800	1025-056
L4	299237-042		INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L5	299237-042		INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L6	299237-056		INDUCTOR:FXD MOLDED 33UH	99800	1025-056
Q1	294151-001	2	TRANSISTOR:NPN SI	04713	2N4124
Q2	294151-001		TRANSISTOR:NPN SI	04713	2N4124
R1	299701-362	1	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R2	299701-242	1	RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R3	299701-391	4	RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R4	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R5	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R6	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
1A5A3	298919-001	1	60 MHZ GENERATOR PC BOARD (FIGURE 4-34)	56872	298919-001
C1	299244-001	8	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C2	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C3	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C4	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C5	299243-001	2	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C6	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C7	299241-560	4	CAP:FXD DIP MICA 56PF +5% 300WVDC	72136	DM5-560J
C8	299241-010	3	CAP:FXD DIP MICA 1PF +0.5PF 300WVDC	72136	DM5-010D
C9	299241-560		CAP:FXD DIP MICA 56PF +5% 300WVDC	72136	DM5-560J
C10	299241-010		CAP:FXD DIP MICA 1PF +0.5PF 300WVDC	72136	DM5-010D
C11	299241-560		CAP:FXD DIP MICA 56PF +5% 300WVDC	72136	DM5-560J
C12	299241-010		CAP:FXD DIP MICA 1PF +0.5PF 300WVDC	72136	DM5-010D
C13	299241-070	2	CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C14	299241-560		CAP:FXD DIP MICA 56PF 300WVDC	72136	DM5-560J
C15	299250-391	1	CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C16	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C17	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C18	299245-001	2	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C19	299241-430	1	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C20	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C21			NOT USED		
C22	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C23			NOT USED		
C24	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C25	299245-001		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C26	299240-001	1	CAP:FXD DIP TA 6.8UF +20% 35WVDC	31433	T368B685M035AS
E1	293310-001	3	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
J4	299235-001	1	CONNECTOR:RT ANGLE	98291	51-353-0000
L1	299237-052	1	INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L2	299237-038	3	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L3	231105-001	4	INDUCTOR:VAR .133UH	56872	231105-001

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILETECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A3L4	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L5	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L6	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L7	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L8	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L9	299237-022	2	INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L10	299237-022		INDUCTOR:FXD MOLDED 1.2UH	99800	1025-022
L11	299237-048	1	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
Q1	294151-001	1	TRANSISTOR:NPN SI	04713	2N4124
Q2	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q3	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-362	2	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R2	299701-242	2	RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R3	299701-391	3	RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R4	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R5			NOT USED		
R6			NOT USED		
R7	299701-103	1	RESISTOR:FXD CAR 10K +5% 1/4W	01121	RC07GF103J
R8	299701-102	1	RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R9	299701-362		RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R10	299701-242		RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J
R11	299701-391		RESISTOR:FXD CAR 390 OHM +5% 1/4W	01121	RC07GF391J
R12	299701-471	1	RESISTOR:FXD CAR 470 OHM +5% 1/4W	01121	RC07GF471J
1A5A4	298917-002	1	65 MHZ GENERATOR PC BOARD (FIGURE 4-36)	56872	298917-002
C1	299244-001	6	CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C2	299241-680	2	CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C3	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C4	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C5	299245-001	1	CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C7	299243-001	9	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C8	299241-030	1	CAP:FXD DIP MICA 3PF +0.5PF 300WVDC	72136	DM5-030D
C9	293592-001	3	CAP:FXD DIP MICA 0.5PF +0.25PF 300WVDC	93958	1C.5RC
C10	299241-070	2	CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C11	293592-001		CAP:FXD DIP MICA 0.5PF +0.25PF 300WVDC	93958	1C.5RC
C12	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C13	293592-001		CAP:FXD DIP MICA 0.5PF +0.25PF 300WVDC	93958	1C.5RC
C15	299241-120	1	CAP:FXD DIP MICA 12PF +5% 300WVDC	72136	DM5-120J
C16	299241-430	4	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C17	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C18	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C19	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C20	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C21	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C22	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C23	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C24	299241-101	1	CAP:FXD DIP MICA 100PF +5% 300WVDC	72136	DM5-101J
C25	299241-750	1	CAP:FXD DIP MICA 75PF +5% 300WVDC	72136	DM5-750J
C26	299241-020	2	CAP:FXD DIP MICA 2PF +0.5PF 300WVDC	72136	DM5-020D
C27	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C28	299241-010	2	CAP:FXD DIP MICA 1PF +0.5PF 30WVDC	72136	DM5-010D
C29	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C30	299241-010		CAP:FXD DIP MICA 1PF +0.5PF 300WVDC	72136	DM5-010D
C31	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C32	299241-020		CAP:FXD DIP MICA 2PF +0.5PF 300WVDC	72136	DM5-020D
C33	299241-680		CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C34	299250-241	1	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C35	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C36	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C37	299240-002	1	CAP:FXD DIP TA 22UF +20% 15WVDC	31433	T368B226M015AS
C39	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C40	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
E1	293306-001	2	TERMINAL:DISCONNECT	71279	1019-2-901

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A4E2	293306-001	3	TERMINAL:DISCONNECT	71279	1019-2-901
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001	1	TERMINAL SOLDER	71279	1597-2-01
J7	299235-001		CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L2	299237-024	2	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L3	299237-038	5	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L4	231105-001	9	INDUCTOR:VAR .133UH	56872	231105-001
L5	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L6	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L7	231105-001	1	INDUCTOR:VAR .133UH	56872	231105-001
L8	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L9	299237-024		INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L10	299237-038	1	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L11	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L12	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L13	299237-038	1	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L14	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L15	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L16	231105-001	1	INDUCTOR:VAR .133UH	56872	231105-001
L17	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L18	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L19	299237-052	1	INDUCTOR:FXD MOLDED 22UH	99800	1025-052
Q1	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q2	294147-001		TRANSISTOR:NPN SI	04713	2N3866
Q3	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-362	3	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R2	299701-242	3	RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R3	299701-102	3	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R4	299701-681	1	RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R5	299701-270	1	RESISTOR:FXD CAR 27 OHM $\pm 5\%$ 1/4W	01121	RC07GF270J
R7	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R8	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R9	299701-201		RESISTOR:FXD CAR 200 OHM $\pm 5\%$ 1/4W	01121	RC07GF201J
R10	299701-102	1	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R11	299701-362		RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R12	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R13	299701-391	1	RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R17	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R18	299701-301		RESISTOR, 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R19	299700-471	1	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/8W	01121	RC05GF471J
R20	299700-102	1	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/8W	01121	RC05GF102J
U1	293500-002	1	IC:ECL TYPE D FF	04713	MC167C2
XU1	294567-001	1	SOCKET: IC 16 PIN	01295	C931610
1A5A5	298915-001	1	64 MHZ GENERATOR PC BOARD (FIGURE 4-38)	56872	298915-001
C1	299244-001	7	CAP:FXD CER DISC .01UF $\pm 20+80\%$ 1000WVDC	56289	CO23F501C103Z
C2	299241-030	1	CAP:FXD DIP MICA 3PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-030D
C3	299244-001	5	CAP:FXD CER DISC .01UF $\pm 20+80\%$ 1000WVDC	56289	CO23F501C103Z
C4			NOT USED		
C5	299241-010		CAP:FXD DIP MICA 1PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-010D
C6	299243-001	10	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	299244-001		CAP:FXD CER DISC .01UF $\pm 20+80\%$ 1000WVDC	56289	CO23F501C103Z
C8	299241-240		CAP:FXD DIP MICA 24PF $\pm 5\%$ 300WVDC	72136	DM5-240J
C9	299241-020	3	CAP:FXD DIP MICA 2PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-020D
C10	299241-330	3	CAP:FXD DIP MICA 33PF $\pm 5\%$ 300WVDC	72136	DM5-330J
C11	299241-330		CAP:FXD DIP MICA 33PF $\pm 5\%$ 300WVDC	72136	DM5-330J
C12	299241-010		CAP:FXD DIP MICA 1PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-010D
C13	299241-330	3	CAP:FXD DIP MICA 33PF $\pm 5\%$ 300WVDC	72136	DM5-330J
C14	299241-010		CAP:FXD DIP MICA 1PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-010D

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A5C15	299241-430	6	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C16	299250-131	1	CAP:FXD DIP MICA 130PF +5% 500WVDC	14655	CM04FD131J03
C17	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C18	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C19	299241-070	2	CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C20	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C21	299241-070		CAP:FXD DIP MICA 7PF +0.5PF 300WVDC	72136	DM5-070D
C22	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C23	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C24	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C25	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C26	299241-020		CAP:FXD DIP MICA 2PF +0.5PF 300WVDC	72136	DM5-020D
C27	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C28	299241-010		CAP:FXD DIP MICA 1PF +5PF 300WVDC	72136	DM5-010D
C29	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C30	299241-010		CAP:FXD DIP MICA 1PF +0.5PF 300WVDC	72136	DM5-010D
C31	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C32	299241-020		CAP:FXD DIP MICA 2PF +0.5PF 300WVDC	72136	DM5-020D
C33	299241-680	1	CAP:FXD DIP MICA 68PF +5% 300WVDC	72136	DM5-680J
C34	299250-241	1	CAP:FXD DIP MICA 240PF +5% 500WVDC	14655	CM04FD241J03
C35	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C36	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C37	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C38	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C39	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C40	299244-001		CAP:FXD CER DISC .01UF -20+80% 1000WVDC	56289	CO23F501C103Z
C41	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C42	299244-001		CAP:FXD CER DISC .01UF +20+80% 1000WVDC	56289	CO23F501C103Z
E1	293310-001	6	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
E6	293310-001		TERMINAL SOLDER	71279	1597-2-01
J8	299235-001	1	CONNECTOR:RT ANGLE	98291	51-353-0000
L1	299237-052	3	INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L2	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L3	299237-032	3	INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L4	299237-038	2	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L5	231105-001	10	INDUCTOR:VAR .133UH	56872	231105-001
L6	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L7	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L8	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L9	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L10	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L11	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L12	299237-020	3	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L13	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L14	299237-032		INDUCTOR:FXD MOLDED 3.3UH	99800	1025-032
L15	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L16	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L17	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L18	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L19	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L20	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L21	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
Q1	294151-001	1	TRANSISTOR:NPN SI	04713	2N4124
Q2	299239-001	3	TRANSISTOR:NPN SI	04713	2N5179
Q3	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-362	3	RESISTOR:FXD CAR 3.6K +5% 1/4W	01121	RC07GF362J
R2	299701-242	4	RESISTOR:FXD CAR 2.4K +5% 1/4W	01121	RC07GF242J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A5R3	299701-301	2	RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R4	299701-102	2	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R5	299701-103	1	RESISTOR:FXD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R6	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R7	299701-101	1	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R8	299701-362		RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R9	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R10	299701-391	3	RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R11	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
R12	299701-301		RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R13	299701-470	1	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R14	299701-362		RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R15	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R16	299701-681	1	RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R17	299701-242		RESISTOR:FXD CAR 2.4K $\pm 5\%$ 1/4W	01121	RC07GF242J
R18			NOT USED		
R19			NOT USED		
R20			NOT USED		
R21			NOT USED		
R22	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R23	299701-391		RESISTOR:FXD CAR 390 OHM $\pm 5\%$ 1/4W	01121	RC07GF391J
U1	293350-001	2	IC:TTL DUAL J-K FF	01295	SN74S113N
U2	293350-001		IC:TTL DUAL J-K FF	01295	SN74S113N
XU1	294573-001	2	SOCKET:IC 14 PIN	01295	C931410
XU2	294573-001		SOCKET:IC 14 PIN	01295	C931410
1A5A6	298926-001	1	35/35.5 MHZ GENERATOR PC BOARD (FIGURE 4-39)	56872	298926-001
C1	299244-001	6	CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C2	299241-050	3	CAP:FXD DIP MICA 5PF $\pm 0.5\%$ 300WVDC	72136	DM5-050D
C3	299244-001		CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C4	299244-001		CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C5	299241-430	3	CAP:FXD DIP MICA 43PF $\pm 5\%$ 300WVDC	72136	DM5-430J
C6	299241-050		CAP:FXD DIP MICA 5PF $\pm 0.5\%$ 300WVDC	72136	DM5-050D
C7	299243-001	14	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C8			NOT USED		
C9	299250-131	1	CAP:FXD DIP MICA 130PF $\pm 5\%$ 500WVDC	14655	CM04FD131J03
C10	299241-430		CAP:FXD DIP MICA 43PF $\pm 5\%$ 300WVDC	72136	DM5-430J
C11	299241-050		CAP:FXD DIP MICA 5PF $\pm 0.5\%$ 300WVDC	72136	DM5-050D
C12	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C13	299240-001	2	CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
C14	299240-001		CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
C15	299244-001		CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C16	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C17	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C18	299244-001		CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C19	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C20	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C21	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C22	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C23	299244-001		CAP:FXD CER DISC .01UF $\pm 20\%$ 1000WVDC	56289	CO23F501C103Z
C24	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C25	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C26	299250-241	1	CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03
C27	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C28	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C29	299241-430		CAP:FXD DIP MICA 43PF $\pm 5\%$ 300WVDC	72136	DM5-430J
C30	299250-301		CAP:FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C31	299241-040	1	CAP:FXD DIP MICA 4PF $\pm 0.5\%$ 300WVDC	72136	DM5-040D
C32	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C33	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
CR1	293200-001		DIODE SIGNAL	01295	IN645

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A5A6E1	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293306-001	1	TERMINAL SOLDER	71279	1019-2-901
J6	299235-001	1	CONNECTOR:RT ANGLE PC BD	98291	51-353-0000
L1	299237-020	4	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L2	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L3	231105-001	2	INDUCTOR:VAR .133UH	56872	231105-001
L4	299237-052	4	INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L5	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L6	299237-038	2	INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L7	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L8	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
L9	299237-038		INDUCTOR:FXD MOLDED 5.6UH	99800	1025-038
L10	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L11	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L12	299237-052		INDUCTOR:FXD MOLDED 22UH	99800	1025-052
Q1	294172-001	5	TRANSISTOR:NPN SI	04713	MPS918
Q2	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q3	294151-001	2	TRANSISTOR:NPN SI	04713	2N4124
Q4	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q7	294151-001		TRANSISTOR:NPN SI	04713	2N4124
Q8	294153-001	1	TRANSISTOR:PNP SI	04713	2N4126
R1	299701-622	11	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R2	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R3	299701-102	4	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R4	299701-471	3	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R5	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R6	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R7	299701-180	2	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R8	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R9	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R10	299701-681	2	RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R11	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R12	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R13	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R14	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R15	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R16	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R17			NOT USED		
R18	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R19	299701-101	2	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R20	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R21	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R22	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R23	299701-180		RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R24	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R25	299701-681		RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R26	299701-472	2	RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R27	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R28	299701-161	1	RESISTOR:FXD CAR 160 OHM $\pm 5\%$ 1/4W	01121	RC07GF161J
R29	299701-201	1	RESISTOR:FXD CAR 200 OHM $\pm 5\%$ 1/4W	01121	RC07GF201J
U1	293350-001	1	IC:TTL DUAL J-K FF	01295	SN74S113N
U2	293496-001	1	IC:TTL DECADE COUNTER	18324	82S90
XU1	294573-001	2	SOCKET:IC 14 PIN	01295	C931410
XU2	294573-001		SOCKET:IC 14 PIN	01295	C931410
1A11A1	298997-001	1	POWER SUPPLY RECT/FILT PC BOARD	56872	298997-001
C1	293911-001	4	CAP:FXD AL 2200UF @25 $\pm 10\%$ +50%	52763	EG2T/25

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A11A1C2	293911-001	4	CAP:FXD AL 2200UF @25 -10%+50%	52763	EG2T/25
C3	293911-001		CAP:FXD AL 2200UF @25 -10%+50%	52763	EG2T/25
C4	293911-001		CAP:FXD AL 2200UF @25 -10%+50%	52763	EG2T/25
C5	293912-001		CAP:FXD AL 2200UF 35/40V -10%+50%	52763	EG2T/40
C6	293912-001	2	CAP:FXD AL 2200UF 35/40V -10%+50%	52763	EG2T/40
C7	293912-001		CAP:FXD AL 2200UF 35/40V -10%+50%	52763	EG2T/40
C8	293912-001		CAP:FXD AL 2200UF 35/40V -10%+50%	52763	EG2T/40
F1	294713-001		FUSE: 1AG 32V 7.5AMP	75915	30107-5
F2	294713-001	2	FUSE: 1AG 32V 7.5AMP	75915	30107-5
R1	299702-202		RESISTOR:FXD CAR 2K -+5% 1/2W	01121	RC20GF202J
R2	299702-202		RESISTOR:FXD CAR 2K -+5% 1/2W	01121	RC20GF202J
1A11A2	298998-001	1	+5.2 VOLT REGULATOR PC BOARD (FIGURE 4-44)	56872	298998-001
C1	115307-031	3	CAP:FXD AL 200UF -10%+75% 25WVDC	56289	TE1213
C2	293915-001	1	CAP:FXD CER DISC .02UF -+20% 100WVDC	56289	TGS20
C3	115307-031	1	CAP:FXD AL 200UF -10%+75% 25WVDC	56289	TE1213
C4	299250-471		CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C5	115307-010	1	CAP:FXD AL 100UF -+10%+75% 25WVDC	56289	TE1211
C6	115307-031	2	CAP:FXD AL 200UF -10%+75% 25WVDC	56289	TE1213
CR1	293202-001		DIODE RECTIFIER	04713	IN4001
CR2	293202-001	1	DIODE RECTIFIER	04713	IN4001
R1	299796-001		RESISTOR:FXD MLD .05 OHM 3% 2W	91637	LVR-2
R2	299701-102	1	RESISTOR:FXD CAR 1K -+5% 1/4W	01121	RC07GF102J
R3	299709-322	1	RESISTOR:FXD FLM 1K -+1% 1/4W	01121	RN60C1001F
R4	299709-421	1	RESISTOR:FXD FLM 10K -+1% 1/4W	01121	RN60C1002F
R5	299709-359	1	RESISTOR:FXD FLM 2.43K -+1% 1/4W	01121	RN60D2431F
R6	299709-400	1	RESISTOR:FXD FLM 6.04K -+1% 1/4W	01121	RN60D6041F
R7	299701-681	2	RESISTOR:FXD CAR 680 OHM -+5% 1/4W	01121	RC07GF681J
R8	299701-681		RESISTOR:FXD CAR 680 OHM -+5% 1/4W	01121	RC07GF681J
R9	299701-242	1	RESISTOR:FXD CAR 2.4K -+5% 1/4W	01121	RC07GF242J
R10	299745-006	1	RESISTOR:VAR 500 OHM 3/4W	80294	3009P-1-501
R11	299701-391	1	RESISTOR:FXD CAR 390 OHM -+5% 1/4W	01121	RC07GF391J
U1	293502-001	1	IC:LIN VOLTAGE REGULATOR	04713	MC1723CL
U2	293511-001	1	IC:LIN OP AMP	72314	UA741TC
XU1	294573-001	1	IC:SOCKET 14 PIN	01295	C931410
XU2	294565-001	1	IC:SOCKET 8 PIN	01295	C930810
1A11A3	299200-001	1	-12 VOLT REGULATOR PC BOARD (FIGURE 4-45)	56872	299200-001
C1	115307-031	1	CAP:FXD AL 200UF -10%+75% 25WVDC	56289	TE1213
C2	293915-001	1	CAP:FXD CER DISC .02UF -+20% 100WVDC	56289	TGS20
C3	299250-471	1	CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C4	115307-010	3	CAP:FXD AL 100UF -10%+75% 25WVDC	56289	TE1211
C5	115307-010		CAP:FXD AL 100UF -10%+75% 25WVDC	56289	TE1211
C6	115307-010	2	CAP:FXD AL 100UF -10%+75% 25WVDC	56289	TE1211
CR1	293202-001		DIODE RECTIFIER	04713	IN4001
CR2	293202-001	1	DIODE RECTIFIER	04713	IN4001
R1	299796-001		RESISTOR:FXD MLD .05 OHM 3% 2W	91637	LVR-2
R2	299701-102	2	RESISTOR:FXD CAR 1K -+5% 1/4W	01121	RC07GF102J
R3	299709-322	2	RESISTOR:FXD FLM 1K -+1% 1/4W	01121	RN60C1001F
R4	299709-421	1	RESISTOR:FXD FLM 10K -+1% 1/4W	01121	RN60C1002F
R5	299709-322	1	RESISTOR:FXD FLM 1K -+1% 1/4W	01121	RN60C1001F
R6	299709-400		RESISTOR:FXD FLM 6.04K -+1% 1/4W	01121	RN60D6041F
R7	299701-301	1	RESISTOR:FXD CAR 300 OHM -+5% 1/4W	01121	RC07GF301J
R8	299701-471	1	RESISTOR:FXD CAR 470 OHM -+5% 1/4W	01121	RC07GF471J
R9	299745-004	1	RESISTOR:VAR 100 OHM 3/4W	80294	3009P-1-101
R10	299701-102		RESISTOR:FXD CAR 1K -+5% 1/4W	01121	RC07GF102J
R11	299701-362	1	RESISTOR:FXD CAR 3.6K -+5% 1/4W	01121	RC07GF362J
R12	299701-180	1	RESISTOR:FXD CAR 18 OHM -+5% 1/4W	01121	RC07GF180J
U1	293502-001	1	IC:LIN VOLTAGE REGULATOR	04713	MC1723CL
U2	293511-001	1	IC:LIN OP AMP	72314	UA741TC

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A11A3XU1	294573-001	1	IC:SOCKET 14 PIN	01295	C931410
XU2	294565-001	1	IC:SOCKET 16 PIN	01295	C930810
1A11A4	298928-001	1	POWER SUPPLY MOTHERBOARD (FIGURE 4-42)	56872	298928-001
J1	294408-004	3	CONNECTOR:PC EDGE	05574	3KT10/1JV12
J2	294408-004		CONNECTOR:PC EDGE	05574	3KT10/1JV12
J3	294408-004		CONNECTOR:PC EDGE	05574	3KT10/1JV12
J4	293080-001	10	CONNECTOR:POST	00779	86091-4
J5	293080-001	10	CONNECTOR:POST	00779	86091-4
1A11T1	299809-001	1	TRANSFORMER ASSEMBLY	56872	299809-001
1A12	298932-001	1	REAR PANEL ASSEMBLY (FIGURE 4-41)	56872	298932-001
B1	299256-001	1	FAN	28875	MWSZ107FL-7
	299289-001	1	FAN, SCREEN	28875	69-93
	299269-001	1	HEAT SINK, RECTIFIER	08730	HS6029-1-0-3
BR1	294772-001	2	RECTIFIER BRIDGE 25A	13409	S25A10
BR2	294772-001		RECTIFIER BRIDGE 25A	13409	S25A10
C1	299245-001	2	CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C2	299245-001		CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
F1	294714-001	1	FUSE:3AB 250V 2.5AMP	75915	32302-5
	298490-001	1	HEAT SINK	56872	298490-001
FL1	296612-001	1	FILTER	56872	296612-001
	296610-001	1	CONNECTOR, POWER	56872	296610-001
Q1	294175-001	2	TRANSISTOR:DAR NPN SI	04713	2N6055
Q2	294175-001		TRANSISTOR:DAR NPN SI	04713	2N6055
	231857-001	1	CABLE ASSEMBLY	56872	231857-001
S1	294513-001	1	SWITCH SLIDE 4PDT	56872	SW442HK
W11	299297-011	1	CABLE ASSEMBLY COAXIAL/J2	56872	299297-011
W13	299297-013	1	CABLE ASSEMBLY COAXIAL/J1	56872	299297-013
W25	299297-025	1	CABLE ASSEMBLY COAXIAL/J3	56872	299297-025
XF1	294992-001	1	FUSE HOLDER	75915	342004AL
	293602-001	1	POWER LINE RECEPTACLE, FILTER	05245	3EF1
1A12A1	299261-001		RELAY ASSEMBLY	56872	299261-001
E1	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
K1	294787-001	1	RELAY SPDT, 6AMP	82050	BC69-10
R1	299703-200	1	RESISTOR:FXD CAR 20 OHM +5% 1/2W	01121	RC32GF200J
1A14	299201-001	1	LOGIC/POWER DISTRIBUTION PC BOARD (FIGURE 4-47)	56872	299201-001
C1	115307-010	2	CAP:FXD AL 100UF -10%+75% 25WVDC	56289	TE1211
C2	115307-010		CAP:FXD AL 100UF -10%+75% 25WVDC	56289	TE1211
CR1	293203-001	1	DIODE ZENER 6.2V +5%	04713	IN753A
CR2	293204-001	1	DIODE ZENER 15V +5%	04713	IN3024B
CR3	293291-001	1	DIODE	30992	VZ16DC1
E1	293310-001	8	TERMINAL SOLDER	71279	1597-2-01
J1	293080-001	16	CONNECTOR POST	00779	86091-4
J2	293080-001	10	CONNECTOR POST	00779	86091-4
J3	293080-001	10	CONNECTOR POST	00779	86091-4
J4	299932-001	3	HEADER:DOUBLE ROW 26 PINS	00779	1-87227-3
J5	299932-001		HEADER:DOUBLE ROW 26 PINS	00779	1-87227-3
J6	299932-001		HEADER:DOUBLE ROW 26 PINS	00779	1-87227-3
J7	293080-001	10	CONNECTOR POST	00779	86091-4
J8	293080-001	16	CONNECTOR POST	00779	86091-4
J9	293080-001	10	CONNECTOR POST	00779	86091-4
R1	299701-101	4	RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R2	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J
R3	299701-101		RESISTOR:FXD CAR 100 OHM +5% 1/4W	01121	RC07GF101J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A14R4	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R5	299701-681	1	RESISTOR:FXD CAR 600 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R6	299701-821	1	RESISTOR:FXD CAR 820 OHM $\pm 5\%$ 1/4W	01121	RC07GF821J
SCR1	294154-001	2	RECTIFIER, SILICON CONTROLLED	04713	2N4172
SCR2	294154-001		RECTIFIER, SILICON CONTROLLED	04713	2N4172

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
	298936-001	1	FREQUENCY EXTENDER 3600E1	56872	298936-001
W1	231860-001	1	FREQUENCY EXTENDER HARNESS ASSEMBLY	56872	231860-001
W15	299297-015	1	CABLE ASSEMBLY, COAXIAL	56872	299297-015
W16	299297-016	1	CABLE ASSEMBLY, COAXIAL	56872	299297-016
W17	299297-017	1	CABLE ASSEMBLY, COAXIAL	56872	299297-017
W19	299297-019	1	CABLE ASSEMBLY, COAXIAL	56872	299297-019
W20	299297-020	1	CABLE ASSEMBLY, COAXIAL	56872	299297-020
W21	299297-021	1	CABLE ASSEMBLY, COAXIAL	56872	299297-021
W22	299297-022	1	CABLE ASSEMBLY, COAXIAL	56872	299297-022
1A6	298938-001	1	24/33 MHZ OSCILLATOR ASSEMBLY (FIGURE 4-49)	56872	298938-001
FL1	293609-001	6	FILTER CONNECTOR	72982	1201-066
FL2	293609-001		FILTER CONNECTOR	72982	1201-066
FL3	293609-001		FILTER CONNECTOR	72982	1201-066
FL4	293609-001		FILTER CONNECTOR	72982	1201-066
FL5	293609-001		FILTER CONNECTOR	72982	1201-066
FL6	293609-001		FILTER CONNECTOR	72982	1201-066
J1	299233-001	2	CONNECTOR:ST BULKHEAD	98291	51-045-0000
J2	299233-001		CONNECTOR:ST BULKHEAD	98291	51-045-0000
1A6A1	298949-001	1	24/33 MHZ OSCILLATOR PC BOARD (FIGURE 4-50)	56872	298949-001
C1	299253-001	7	CAP:FXD POR 2.7PF +5PF 500WVDC	95275	VY10CA2R7DER
C2	299241-430	10	CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C3	293593-001	10	CAP:VAR TRMR 2-8PF	91293	8090
C4	299250-391	10	CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C5	299253-001		CAP:FXD POR 2.7PF +0.5PF 500WVDC	95275	VY10CA2R7DER
C6	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C7	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C8	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C9	299253-001		CAP:FXD POR 2.7PF +0.5PF 500WVDC	95275	VY10CA2R7DER
C10	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C11	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C12	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C13	299253-001		CAP:FXD POR 2.7PF +0.5PF 500WVDC	95275	VY10CA2R7DER
C14	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C15	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C16	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C17	299253-002	3	CAP:FXD POR 8.2PF +5% 500WVDC	95275	VY10A8R2JE
C18	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C19	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C20	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C21	299253-001		CAP:FXD POR 2.7PF +0.5PF 500WVDC	95275	VY10CA2R7DER
C22	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C23	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C24	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C25	299253-001		CAP:FXD POR 2.7PF +0.5PF 500WVDC	95275	VY10CA2R7DER
C26	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C27	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C28	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C29	299253-001		CAP:FXD POR 2.7PF +0.5zF 500WVDC	95275	VY10CA2R7DER
C30	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C31	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C32	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C33	299253-002		CAP:FXD POR 8.2PF +5% 500WVDC	95275	VY10A8R2JE
C34	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C35	293593-001		CAP:VAR TRMR 2-8PF	91293	8090
C36	299250-391		CAP:FXD DIP MICA 390PF +5% 100WVDC	14655	CM04FA391J03
C37	299253-002		CAP:FXD POR 8.2PF +5% 500WVDC	95275	VY10A8R2JE
C38	299241-430		CAP:FXD DIP MICA 43PF +5% 300WVDC	72136	DM5-430J
C39	293593-001		CAP:FXD TRMR 2-8PF	91293	8090

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A6A1C40	299250-391	11	CAP:FXD DIP MICA 390PF $\pm 5\%$ 100WVDC	14655	CM04FA391J03
C41	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C42	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C43	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C44	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C45	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C46	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C47			NOT USED		
C48	299243-001		CAP:FXD CER DISC .001xF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C49	299243-001		CAP:FXD CER DISC .001uF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C50	299240-001	2	CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
C51	299240-001		CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
C52	299243-001	6	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C53	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C54	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
E1	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E2	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E3	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E4	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E5	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E6	293306-001		TERMINAL:DISCONNECT	71279	1019-2-901
E7	293310-001		TERMINAL SOLDER	71279	1597-2-01
E8	293310-001		TERMINAL SOLDER	71279	1597-2-01
E9	293310-001	4	TERMINAL SOLDER	71279	1597-2-01
E10	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-028	8	INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L2	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L3	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L4	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L5	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L6	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L7	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
L8	299237-028		INDUCTOR:FXD MOLDED 2.2UH	99800	1025-028
Q1	294172-001	10	TRANSISTOR:NPN SI	04713	MPS918
Q2	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q3	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q4	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q5	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q6	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q7	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q8	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q9	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q10	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q11	294172-001	10	TRANSISTOR:NPN SI	04713	MPS918
Q12	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q13	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q14	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q15	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q16	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q17	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q18	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q19	294172-001		TRANSISTOR:NPN SI	04713	MPS918
Q20	294153-001		TRANSISTOR:PNP SI	04713	2N4126
Q21	294172-001	10	TRANSISTOR:NPN SI	04713	MPS918
R1	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R2	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R3	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R4	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R5	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R6	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R7	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R8	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A6A1R9	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R10	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R11	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R12	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R13	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R14	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R15	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R16	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R17	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R18	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R19	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R20	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R21	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R22	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R23	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R24	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R25	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R26	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R27	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R28	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R29	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R30	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R31	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R32	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R33	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R34	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R35	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R36	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R37	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R38	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R39	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R40	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R41	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R42	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R43	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R44	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R45	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R46	299701-203		RESISTOR:FXD CAR 20K $\pm 5\%$ 1/4W	01121	RC07GF203J
R47	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R48	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R49	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R50	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R51	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R52	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R53	299701-301	2	RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R54			NOT USED		
R55	299701-301		RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R56	299701-470	1	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
U1	293501-001	1	IC:TTL 4 TO 10 LINE DECODER	01295	SN7442N
U2	293350-001	1	IC:TTL DUAL J-K FF	01295	SN74S113N
XU1	294567-001	1	SOCKET:IC 16 PIN	01295	C931610
XU2	294573-001	1	SOCKET:IC 14 PIN	01295	C931410
1A6A2	298952-001	1	ISOL/DIVIDER PC BOARD (FIGURE 4-51)	56872	298952-001
A1	299254-001	1	POWER DIVIDER	15542	MCL-PSC-2-1
C1	299243-001	4	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C2	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C4	299241-360	2	CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C5	299250-241	2	CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03
C6	299241-200	1	CAP:FXD DIP MICA 20PF $\pm 5\%$ 300WVDC	72136	DM5-200J
C7	299250-241		CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A6A2C8	299241-360	3	CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C9	299243-001		CAP:FXD CER DISC .001UF $\pm 50\%$ 1000WVDC	56289	CK60AW102M
E1	293310-001		TERMINAL SOLDER	71279	1597-2-01
E2			P/O PC BOARD	71279	1597-2-01
E3			P/O PC BOARD	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-042	1	INDUCTOR:FXD MOLDED 8.2UH	99800	1025-042
L2	299237-020	2	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L3	299237-000	2	INDUCTOR:FXD MOLDED .15UH	99800	1025-00
L4	299237-024	1	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L5	299237-000		INDUCTOR:FXD MOLDED .15UH	99800	1025-00
L6	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
Q1	294172-001	1	TRANSISTOR:NPN SI	04713	MPS918
R1	299701-680	1	RESISTOR:FXD CAR 68 OHM $\pm 5\%$ 1/4W	01121	RC07GF680J
R2	299701-101	4	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R3	299701-470	1	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R4	299701-472	2	RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R5	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R6	299701-620	1	RESISTOR:FXD CAR 620 OHM $\pm 5\%$ 1/4W	01121	RC07GF621J
R7	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R8	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R9	299701-390	1	RESISTOR:FXD CAR 39 OHM $\pm 5\%$ 1/4W	01121	RC07GF390J
R10	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
1A6A3	298953-001	1	24-33 MHZ ISOL/AMPL PC BOARD (FIGURE 4-52)	56872	298953-001
C1	299243-001	7	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C2	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C5	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	299241-360	2	CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C8	299250-241	2	CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03
C9	299241-200	1	CAP:FXD DIP MICA 20PF $\pm 5\%$ 300WVDC	72136	DM5-200J
C10	299250-241		CAP:FXD DIP MICA 240PF $\pm 5\%$ 500WVDC	14655	CM04FD241J03
C11	299241-360		CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C12	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
E1	293310-001	2	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1			NOT USED		
L2	299237-048	1	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L3	299237-020	2	INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
L4	299237-000	2	INDUCTOR:FXD MOLDED .15UH	99800	1025-00
L5	299237-024	1	INDUCTOR:FXD MOLDED 1.5UH	99800	1025-024
L6	299237-000		INDUCTOR:FXD MOLDED .15UH	99800	1025-00
L7	299237-020		INDUCTOR:FXD MOLDED 1.00UH	99800	1025-020
Q1	294172-001	2	TRANSISTOR:NPN SI	04713	MPS918
Q2	294172-001		TRANSISTOR:NPN SI	04713	MPS918
R1	299701-680	1	RESISTOR:FXD CAR 68 OHM $\pm 5\%$ 1/4W	01121	RC07GF680J
R2	299701-470	1	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R3	299701-472	2	RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R4	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R5	299701-301	2	RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J
R6	299701-101	2	RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R7	299701-622	1	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R8	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R9	299701-101		RESISTOR:FXD CAR 100 OHM $\pm 5\%$ 1/4W	01121	RC07GF101J
R10	299701-201	1	RESISTOR:FXD CAR 200 OHM $\pm 5\%$ 1/4W	01121	RC07GF201J
R11	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R12	299701-301		RESISTOR:FXD CAR 300 OHM $\pm 5\%$ 1/4W	01121	RC07GF301J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A7	298961-001	1	366 MHZ FILTER/CONVERTER ASSEMBLY (FIGURE 4-54)	56872	298961-001
C1	295374-001	4	CAP:VAR 3-10PF	91293	5201
C2	295374-001		CAP:VAR 3-10PF	91293	5201
C3	295374-001		CAP:VAR 3-10PF	91293	5201
C4	295374-001		CAP:VAR 3-10PF	91293	5201
FL1	293608-001	1	FILTER CONNECTOR	72982	1201-066
J1	299233-001	4	CONNECTOR:ST BULKHEAD	98981	51-045-0000
J2	299233-001		CONNECTOR:ST BULKHEAD	98291	51-045-0000
J3	299233-001		CONNECTOR:ST BULKHEAD	98291	51-045-0000
J4	299233-001		CONNECTOR:ST BULKHEAD	98291	51-045-0000
1A7A1	298962-001	1	366 MHZ FILT/CONV INPUT PC BOARD (FIGURE 4-55)	56872	298962-001
C1	293746-001	2	CAP:VAR TRMR CER 5.5-18PF	72982	538-011-A-5.5-18
C2	299243-001	6	CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C5	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C6	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C7	293746-001		CAP:VAR TRMR CER 5.5-18PF	72982	538-011-A-5.5-18
C8	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
E2	293310-001	1	TERMINAL, SOLDER	71279	1597-2-01
L1	299237-012	2	INDUCTOR:FXD MOLDED 47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED 47 UH	99800	1025-012
M1	231104-001	1	MIXER	15542	SRA-1
Q1	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-180	2	RESISTOR:FXD CAR 18 OHM 1/4W	01121	RC07GF180J
R2	299701-622	4	RESISTOR:FXD CAR 6.2K, 1/4W	01121	RC07GF622J
R3	299701-622		RESISTOR:FXD CAR 6.2K, 1/4W	01121	RC07GF622J
R4	299701-471	2	RESISTOR:FXD CAR 470 OHM, 1/4W	01121	RC07GF471J
R5	299701-471		RESISTOR:FXD CAR 470 OHM, 1/4W	01121	RC07GF471J
R6	299701-622		RESISTOR:FXD CAR 6.2K, 1/4W	01121	RC07GF622J
R7	299701-622		RESISTOR:FXD CAR 6.2K, 1/4W	01121	RC07GF622J
R8	299701-102	1	RESISTOR:FXD CAR 1K, 1/4W	01121	RC07GF102J
R9	299701-180		RESISTOR:FXD CAR 18 OHM, 1/4W	01121	RC07GF180J
R10	299701-161	1	RESISTOR:FXD CAR 160 OHM, 1/4W	01121	RC07GF161J
1A7A2	298963-001	1	366 MHZ FILT/CONV OUTPUT PC BOARD (FIGURE 4-56)	56872	298963-001
C9	299243-001	5	CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C10	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C11	299240-001	1	CAP:FXD DIP TA 6.8UF +-20% 35WVDC	31433	TS68B685M035AS
C12	299245-004	2	CAP:FXD CER .001UF +-20% 50WVDC	56289	8121-M058-W5R0-102K
C13	293746-001	2	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-B
C14	299243-001		CAP:FXD CER DISC .001vF +-20% 1000WVDC	56289	CK60AW102M
C15	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C16	299243-001		CAP:FXD CER DISC .001UF +-20% 1000WVDC	56289	CK60AW102M
C17	299245-004		CAP:FXD CER .001uF +-20% 50WVDC	56289	8121-M058-W5R0-102K
C18	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C19	299250-471	2	CAP:FXD DIP MICA 470PF +-5% 500WVDC	14655	CM06FD471J03
C20	299250-241	2	CAP:FXD DIP MICA 240PF +-5% 500WVDC	14655	CM04FD241J03
C21	299250-241		CAP:FXD DIP MICA 240PF +-5% 500WVDC	14655	CM04FD241J03
C22	299250-471		CAP:FXD DIP MICA 470PF +-5% 500WVDC	14655	CM06FD471J03
E2	293310-001	2	TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
L3	299237-012	4	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L4	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L5	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L6	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L7	231105-001	2	INDUCTOR:VAR .133UH	56872	231105-001

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A7A2L8	299237-026	1	INDUCTOR:FXD MOLDED 1.8UH	99800	1025-026
L9	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
M2	231104-001	1	MIXER	15542	SRA-1
Q3	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R11	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R12	299701-622	4	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R13	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R14	299701-102	2	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R15	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R16	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R17	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
1A8	298954-001	1	361/370 MHZ FILTER AMPL ASSEMBLY (FIGURE 4-58)	56872	298954-001
C1	295374-001	7	CAP:VAR 3-10PF	91293	5201/3469/1999
C2	295374-001		CAP:VAR 3-10PF	91293	5201/3469/1999
C3	295374-001		CAP:VAR 3-10PF	91293	5201/3469/1999
C4	295374-001		CAP:VAR 3-10PF	91293	5201/3469/1999
C5	295374-001		CAP:VAR 3-10PF	91283	5201/3469/1999
C6	295374-001		CAP:VAR 3-10PF	91293	5201/3469/1999
C7	295374-001		CAP:VAR 3-10PF	91293	5201/3469/1999
FL1	293608-001	1	FILTER CONNECTOR	72982	1201-066
J1	299234-001	1	CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
J2	299233-001	1	CONNECTOR:ST BULKHEAD	98291	51-045-0000
1A8A1	298955-001	1	361/370 MHZ INPUT PC BOARD (FIGURE 4-59)	56872	298955-001
C1	293746-001	2	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C2	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C5	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
E2	293310-001	1	TERMINAL SOLDER	71279	1597-2-01
L1	299237-012	2	INDUCTOR:FXD MOLDED 4.7UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
Q1	299239-001	1	TRANSISTOR:NPN SI	04713	2N5179
R1	299701-180	2	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R2	299701-161	1	RESISTOR:FXD CAR 160 OHM $\pm 5\%$ 1/4W	01121	RC07GF161J
R3	299701-622	2	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R4	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R5	299701-102	1	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R6	299701-180		RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
1A8A2	298956-001	1	361/370 MHZ OUTPUT PC BOARD (FIGURE 4-60)	56872	298956-001
C1	299243-001	7	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C2	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C4	293746-001	2	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C5	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	293746-001		CAP:FXD TRMR CER 2-8PF	72982	538-011-A-2-8
C8	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C9	299241-080	2	CAP:FXD DIP MICA 8PF $\pm 0.5\%$ 300WVDC	72136	DM5-080D
C10	299241-080		CAP:FXD DIP MICA 8PF $\pm 0.5\%$ 300WVDC	72136	DM5-080D
C11	299240-001	1	CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B586M085
C12	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	31433	CK60AW102M
E2	293310-001	1	TERMINAL SOLDER	71279	1597-2-01
L1	299237-012	4	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L3	298899-002	3	INDUCTOR:FXD .04UH	56872	298899-002
L4	298899-002		INDUCTOR:FXD .04UH	56872	298899-002
L5	298899-002		INDUCTOR:FXD .04UH	56872	298899-002

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A8A2L6	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L7	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
Q1	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-180	2	RESISTOR:FXD CAR 18 OHM $\pm$ 5% 1/4W	01121	RC07GF180J
R2	299701-622	4	RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R3	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R4	299701-242	1	RESISTOR:FXD CAR 2.4K $\pm$ 5% 1/4W	01121	RC07GF242J
R5	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R6	299701-622		RESISTOR:FXD CAR 6.2K $\pm$ 5% 1/4W	01121	RC07GF622J
R7	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
R8	299701-180		RESISTOR:FXD CAR 18 OHM $\pm$ 5% 1/4W	01121	RC07GF180J
R9	299701-301	1	RESISTOR:FXD CAR 300 OHM $\pm$ 5% 1/4W	01121	RC07GF301J
1A9	298959-001	1	330/331 MHZ FILTER AMPL ASSEMBLY (FIGURE 4-61)	56872	298959-001
C1	295374-001	5	CAP:VAR 3-10PF	91293	5201/34
C2	295374-001		CAP:VAR 3-10PF	91293	5201
C3	295374-001		CAP:VAR 3-10PF	91293	5201
C4	295374-001		CAP:VAR 3-10PF	91293	5201
C5	295374-001		CAP:VAR 3-10PF	91293	5201
FL1	293608-001	1	FILTER CONNECTOR	72982	1201-066
J1	299233-001	2	CONNECTOR:ST BULKHEAD	98291	51-045-0000
J2	299233-001		CONNECTOR:ST BULKHEAD	98291	51-045-0000
1A9A1	298965-001	1	330/331 MHZ FILT/AMPL INPUT PC BOARD (FIGURE 4-62)	56872	298965-001
C1	293746-001	2	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C2	299243-001	4	CAP:FXD CER DISC .001uF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C5	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C6	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
E2	293306-001	1	TERMINAL:DISCONNECT	71279	1019-2-901
L1	299237-012	2	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
Q1	299239-001	1	TRANSISTOR:NPN SI	04713	2N5179
R1	299701-822	2	RESISTOR:FXD CAR 8.2K $\pm$ 5% 1/4W	01121	RC07GF822J
R2	299701-822		RESISTOR:FXD CAR 8.2K $\pm$ 5% 1/4W	01121	RC07GF822J
R3	299701-102	1	RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J
R4	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm$ 5% 1/4W	01121	RC07GF180J
1A9A2	298966-001	1	330/331 MHZ FILT/AMPL OUTPUT PC BOARD (FIGURE 4-63)	56872	298966-001
C1	299243-001	7	CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C2	293746-001	2	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C3	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C5	299243-001		CAP:FXD CER DISC .001vF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C6	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C7	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C8	299240-001	1	CAP:FXD DIP TA 6.8UF $\pm$ 20% 35WVDC	31433	T368B685M035AS
C9	299243-001		CAP:FXD CER DISC .001 UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C10	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
E2	293306-001	2	TERMINAL:SOLDER	71279	1019-2-901
E3	293306-001		TERMINAL:SOLDER	71279	1019-2-901
L1	299237-012	4	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L3	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L4	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
Q1	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A9A2R1	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R2	299701-822	4	RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R3	299701-822		RESISTOR:CAR 8.2K	01121	RC07GF822J
R4	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R5	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R6	299701-822		RESISTOR:FXD CAR 8.2K $\pm 5\%$ 1/4W	01121	RC07GF822J
R7	299701-102	1	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
1A10	298937-001	1	HIGH FREQUENCY SECTION ASSEMBLY (FIGURE 4-65)	56872	298937-001
FL1	293608-001	9	FILTER CONNECTOR	72982	1201-066
FL2	293608-001		FILTER CONNECTOR	72982	1201-066
FL3	293608-001		FILTER CONNECTOR	72982	1201-066
FL4	293608-001		FILTER CONNECTOR	72982	1201-066
FL5	293608-001		FILTER CONNECTOR	72982	1201-066
FL6			NOT USED		
FL7	293608-001		FILTER CONNECTOR	72982	1201-066
FL8	293608-001		FILTER CONNECTOR	72982	1201-066
FL9	293608-001		FILTER CONNECTOR	72982	1201-066
FL10	293608-001		FILTER CONNECTOR	72982	1201-066
J1	299233-001	1	CONNECTOR:ST BULKHEAD	98291	51-045-0000
J2	299234-001	5	CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
J3	299234-001		CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
J4	299234-001		CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
J5	299234-001		CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
J6	299234-001		CONNECTOR:RT ANGLE BULKHEAD	98291	51-047-0000
1A10A1	298995-001	1	337 MHZ OSC/ISOL PC BOARD (FIGURE 4-66)	56872	298995-001
C1	293746-001	7	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C2	299241-360	1	CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C3	299241-101	1	CAP:FXD DIP MICA 100PF $\pm 5\%$ 300WVDC	72136	DM5-101J
C4	299243-001	19	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C5	299241-050	3	CAP:FXD DIP MICA 5PF $\pm 0.5\%$ 300WVDC	72136	DM5-0500
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C8	299241-120	1	CAP:FXD DIP MICA 12PF $\pm 5\%$ 300WVDC	72136	DM5-120J
C9	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C10	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C11	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C12	299243-001		CAP:FXD CER DISC .001UF $\pm 29\%$ 1000WVDC	56289	CK60AW102M
C13	299243-001		CAP:FXD CER DISC .001UF $\pm 29\%$ 1000WVDC	56289	CK60AW102M
C14	299243-001		CAP:FXD CER DISC .001UF $\pm 29\%$ 1000WVDC	56289	CK60AW102M
C15	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C16	299241-430	1	CAP:FXD DIP MICA 43PF $\pm 5\%$ 300WVDC	72136	DM5-430J
C17	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C18	299241-080	6	CAP:FXD DIP MICA 8PF $\pm 0.5\%$ 300WVDC	72136	DM5-080D
C19	299241-080		CAP:FXD DIP MICA 8PF $\pm 0.5\%$ 300WVDC	72136	DM5-080D
C20	299241-080		CAP:FXD DIP MICA 8PF $\pm 0.5\%$ 300WVDC	72136	DM5-080D
C21	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C22	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C23	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C24	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C25	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C26	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C27	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C28	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C29	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C30	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C31	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C32	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C33	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C34	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C35			NOT USED		

TABLE 5-1. REPLACEABLE PARTS LIST

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A10A1C36	299241-100	2	CAP:FXD DIP MICA 10PF ± 0.5 PF 300WVDC	72136	DM5-100J
C37	299241-080		CAP:FXD DIP MICA 8PF ± 0.5 PF 300WVDC	72136	DM5-080D
C38	299241-050		CAP:FXD DIP MICA 5PF ± 0.5 PF 300WVDC	72136	DM5-050D
C39	299241-050		CAP:FXD DIP MICA 5PF ± 0.5 PF 300WVDC	72136	DM5-050D
C40	299241-080		CAP:FXD DIP MICA 8PF ± 0.5 PF 300WVDC	72136	DM5-050D
C41	299241-100		CAP:FXD DIP MICA 10PF ± 0.5 PF 300WVDC	72136	DM5-100J
C42	299241-080		CAP:FXD DIP MICA 8PF ± 0.5 PF 300WVDC	72136	DM5-080D
E1	293310-001	3	TERMINAL SOLDER	71279	1597-2-01
E3	293310-001		TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-012	8	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L3	299257-001	1	INDUCTOR:FXD .133UH	56982	299257-001
L4	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L5			NOT USED		
L6	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L7	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L8	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L9	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L10	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L11			NOT USED		
L12			NOT USED		
L13			NOT USED		
L14			NOT USED		
L15			NOT USED		
L16			NOT USED		
L17	299237-012		P/O PC BOARD	99800	1025-012
L18	299237-012		P/O PC BOARD	99800	1025-012
L19	299237-012		P/O PC BOARD	99800	1025-012
L20			NOT USED		
L21			NOT USED		
L22			NOT USED		
L23	299237-008	1	INDUCTOR:FXD MOLDED .33UH	99800	1025-08
Q1	299239-001	8	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q3	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q5	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q6	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q7	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q8	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-622	1	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R2	299701-362	1	RESISTOR:FXD CAR 3.6K $\pm 5\%$ 1/4W	01121	RC07GF362J
R3	299701-471	6	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R4	299701-472	12	RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R5	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R6	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R7	299701-103	1	RESISTOR:FXD CAR 10K $\pm 5\%$ 1/4W	01121	RC07GF103J
R8	299701-821	1	RESISTOR:FXD CAR 820 OHM $\pm 5\%$ 1/4W	01121	RC07GF821J
R9	299701-180	2	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R10	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R11	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R12	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R13			NOT USED		
R14	299701-470	6	RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R15	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R16	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R17	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R18	299701-471		RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R19			NOT USED		
R20	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R21	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A10A1R22	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R23	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R24	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R25			NOT USED		
R26	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R27	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R28	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R29	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R30	299701-471		RESISTOR:FXD CAR 470 OHM $\pm$ 5% 1/4W	01121	RC07GF471J
R31	299701-180		RESISTOR:FXD CAR 18 OHM $\pm$ 5% 1/4W	01121	RC07GF180J
R32	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R33	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R34	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm$ 5% 1/4W	01121	RC07GF152J
Y1	298315-001	1	CRYSTAL:112.333 MHZ	56872	298315-001
1A10A2	298996-001	1	337 MHZ ISOLATOR PC BOARD (FIGURE 4-67)	56872	298996-001
C1	299243-001	12	CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C2	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C3	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C4	299241-050	4	CAP:FXD DIP MICA 5PF $\pm$ 0.5PF 300WVDC	72136	DM5-050D
C5	293910-001	4	CAP:VAR TRMR CER 2-8PF	72982	538-037-A-2-8
C6	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C7	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C8	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C9	293910-001		CAP:VAR TRMR CER 2-8PF	72982	538-037-A-2-8
C10	299241-050		CAP:FXD DIP MICA 5PF $\pm$ 0.5PF 300WVDC	72136	DM5-050D
C11	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C12	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C13	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C14	299241-080	2	CAP:FXD DIP MICA 8PF $\pm$ 0.5PF 300WVDC	72136	DM5-080D
C15	293910-001		CAP:VAR TRMR CER 2-8PF	72982	538-037-A-2-8
C16	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C17	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C18	299243-001		CAP:FXD CER DISC .001UF $\pm$ 20% 1000WVDC	56289	CK60AW102M
C19	299241-120	1	CAP:FXD DIP MICA 12PF $\pm$ 5% 300WVDC	72136	DM5-120J
C20	293910-001		CAP:VAR TRMR CER 2-8PF	72982	538-037-A-2-8
C21	299240-001		CAP:FXD DIP TA 6.8UF $\pm$ 20% 35WVDC	31433	T368B685M035AS
C22	299245-002	1	CAP:FXD CER .01UF $\pm$ 20% 50WVDC	72982	8121-M058-651-03M
C23	299241-080		CAP:FXD DIP MICA 8PF $\pm$ 0.5PF 300WVDC	72136	DM5-080D
C24	299241-050		CAP:FXD DIP MICA 5PF $\pm$ 0.5PF 300WVDC	72136	DM5-050D
C25	299241-050		CAP:FXD DIP MICA 5PF $\pm$ 0.5PF 300WVDC	72136	DM5-050D
E1	293310-001	3	TERMINAL SOLDER	71279	1597-2-01
E2	293310-001		TERMINAL SOLDER	71279	1597-2-01
E5	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	299237-012	5	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L2	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L3	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L4	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L5	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L6			P/O PC BOARD		
L7			P/O PC BOARD		
L8			P/O PC BOARD		
M1	231104-001	1	MIXER	15542	SRA-1
Q1	299239-001	4	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q3	299239-001		TRANSISTOR:NPN SI	04713	2N5179
Q4	299239-001		TRANSISTOR:NPN SI	04713	2N5179
R1	299701-470	6	RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R2	299701-470		RESISTOR:FXD CAR 47 OHM $\pm$ 5% 1/4W	01121	RC07GF470J
R3	299701-472	8	RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R4	299701-472		RESISTOR:FXD CAR 4.7K $\pm$ 5% 1/4W	01121	RC07GF472J
R5	299701-102	3	RESISTOR:FXD CAR 1K $\pm$ 5% 1/4W	01121	RC07GF102J

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A10A2R6	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R7	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R8	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R9	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R10	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R11	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R12	299701-470		RESISTOR:FXD CAR 47 OHM $\pm 5\%$ 1/4W	01121	RC07GF470J
R13	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R14	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R15	299701-102		RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R16	299701-180	1	RESISTOR:FXD CAR 18 OHM $\pm 5\%$ 1/4W	01121	RC07GF180J
R17	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R18	299701-472		RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R19	299701-152	1	RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
1A10A3	298901-001	1	30-40 MHZ BPF PC BOARD (FIGURE 4-69)	56872	298901-001
C1	299250-301	4	CAP:FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C2	299250-301		CAP:FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14544	CM04FC301J03
C3	299241-120	2	CAP:FXD DIP MICA 12PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-120J
C4	299243-001	3	CAP:FXD DIP MICA .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C5	299250-151	2	CAP:FXD DIP MICA 150PF $\pm 5\%$ 500WVDC	14655	CM04FD151J03
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	299250-151		CAP:FXD DIP MICA 150PF $\pm 5\%$ 500WVDC	14655	CM04FD151J03
C8	299241-120		CAP:FXD DIP MICA 12PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-120J
C9	299250-301		CAP:FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C10	299250-301		CAP:FXD DIP MICA 300PF $\pm 5\%$ 300WVDC	14655	CM04FC301J03
C11	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
E1	293310-001	2	TERMINAL SOLDER	71279	1597-2-01
E4	293310-001		TERMINAL SOLDER	71279	1597-2-01
L1	231105-001	4	INDUCTOR:VAR .133UH	56872	231105-001
L2	231105-005	2	INDUCTOR:VAR 2UH	56872	231105-005
L3	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L4	231105-005		INDUCTOR:VAR 2UH	56872	231105-005
L5	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L6	231105-001		INDUCTOR:VAR .133UH	56872	231105-001
L7	299237-048	1	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
Q1	294172-001	1	TRANSISTOR:NPN SI	04713	MPS918
R1	299701-161	3	RESISTOR:FXD CAR 160 OHM $\pm 5\%$ 1/4W	01121	RC07GF161J
R2	299701-472	1	RESISTOR:FXD CAR 4.7K $\pm 5\%$ 1/4W	01121	RC07GF472J
R3	299701-102	1	RESISTOR:FXD CAR 1K $\pm 5\%$ 1/4W	01121	RC07GF102J
R4	299701-161		RESISTOR:FXD CAR 160 OHM $\pm 5\%$ 1/4W	01121	RC07GF161J
R5	299701-161		RESISTOR:FXD CAR 160 OHM $\pm 5\%$ 1/4W	01121	RC07GF161J
1A10A4	298902-001	1	330.5 MHZ POWER AMPL PC BOARD (FIGURE 4-70)	56872	298902-001
C1	299243-001	7	CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C2			NOT USED		
C3	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C4	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C5	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C6	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C7	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C8	299243-001		CAP:FXD CER DISC .001UF $\pm 20\%$ 1000WVDC	56289	CK60AW102M
C9	293746-001	3	CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C10	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C11	299241-100	2	CAP:VSD DIP MICA 10PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-100J
C12	299241-100		CAP:FXD DIP MICA 10PF $\pm 0.5\text{PF}$ 300WVDC	72136	DM5-100J
C13	299241-360	2	CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C14	293746-001		CAP:VAR TRMR CER 2-8PF	72982	538-011-A-2-8
C15	299241-360		CAP:FXD DIP MICA 36PF $\pm 5\%$ 300WVDC	72136	DM5-360J
C16	299240-001	1	CAP:FXD DIP TA 6.8UF $\pm 20\%$ 35WVDC	31433	T368B685M035AS
E1	293310-001	1	TERMINAL SOLDER	71279	1597-2-01

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A10A4E2	293306-001	2	TERMINAL, SOLDER	71279	1019-2-901
E3	293306-001		TERMINAL, SOLDER	71279	1019-2-901
L1			NOT USED		
L2			NOT USED		
L3	299237-012	2	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L4	298899-002	3	INDUCTOR:FXD .04UH	56872	298899-002
L5	298899-002		INDUCTOR:FXD .04UH	56872	298899-002
L6	298899-002		INDUCTOR:FXD .04UH	56872	298899-002
L7	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
M1	231104-002	1	MIXER	15542	SRA-1WH
Q1	299239-001	1	TRANSISTOR:NPN SI	04713	2N5179
Q2	294147-001	2	TRANSISTOR:NPN SI	04713	2N3866
Q3	294147-001		TRANSISTOR:NPN SI	04713	2N3866
R1	299701-180	1	RESISTOR:FXD CAR 18 OHM +5% 1/4W	01121	RC07GF180J
R2	299701-622	2	RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R3	299701-622		RESISTOR:FXD CAR 6.2K +5% 1/4W	01121	RC07GF622J
R4	299701-681	1	RESISTOR:FXD CAR 680 OHM +5% 1/4W	01121	RC07GF681J
R5	299701-301	2	RESISTOR:FXD CAR 300 OHM +5% 1/4W	01121	RC07GF301J
R6	299701-102	2	RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R7	299701-201	1	RESISTOR:FXD CAR 200 OHM +5% 1/4W	01121	RC07GF201J
R8	299701-102		RESISTOR:FXD CAR 1K +5% 1/4W	01121	RC07GF102J
R9	299701-301		RESISTOR:FXD CAR 300 OHM +5% 1/4W	01121	RC07GF301J
R10	299701-161	3	RESISTOR:FXD CAR 160 OHM +5% 1/4W	01121	RC07GF161J
R11			NOT USED		
R12			NOT USED		
R13			NOT USED		
R14			NOT USED		
R15	299701-470	1	RESISTOR:FXD CAR 47 OHM +5% 1/4W	01121	RC07GF470J
R16	299701-161		RESISTOR:FXD CAR 160 OHM +5% 1/4W	01121	RC07GF161J
R17	299701-161		RESISTOR:FXD CAR 160 OHM +5% 1/4W	01121	RC07GF161J
1A10A5	298900-001	1	1-5 MHZ COMB GENERATOR PC BOARD (FIGURE 4-72)	56872	298900-001
C1	299243-001	10	CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C2	299240-002	1	CAP:FXD DIP TA 22UF +20% -5WVDC	31433	T368B226M015AS
C3	299240-001	1	CAP:FXD DIP TA 6.8UF +20% 35WVDC	31433	T368B685M035AS
C4	299245-001	1	CAP:FXD CER .1UF +20% 50WVDC	72982	8121-M058-W5R0-104M
C5	299245-002	8	CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C6	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C7	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C8	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C9	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C10	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C11	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C12	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C13	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C14	299243-001		CAP:FXD CER DISC .001UF +20% 1000WVDC	56289	CK60AW102M
C15			NOT USED		
C16			NOT USED		
C17	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C18	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C19	299250-132	2	CAP:FXD DIP MICA 1300PF +5% 500WVDC	14655	CM06FD132J03
C20	299250-432	1	CAP:FXD DIP MICA 4300PF +5% 500WVDC	14655	CM06FD432J03
C21	299250-132		CAP:FXD DIP MICA 1300PF +5% 500WVDC	14655	CM06FD132J03
C22	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C23	299250-471	2	CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C24	299250-162	1	CAP:FXD DIP MICA 1600PS +5% 500WVDC	14655	CM06FD162J03
C25	299250-471		CAP:FXD DIP MICA 470PF +5% 500WVDC	14655	CM06FD471J03
C26	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C27	299245-002		CAP:FXD CER .01UF +20% 50WVDC	72982	8121-M058-651-103M
C28	299250-301	4	CAP:FXD DIP MICA 300PF +5% 300WVDC	14655	CM04FC301J03
C29	299250-102	2	CAP:FXD DIP MICA 1000PF +5% 500WVDC	14655	CM06FD102J03

TABLE 5-1. REPLACEABLE PARTS LIST (Cont)

Reference Designation	AILTECH Part Number	Qty	Description	Mfr Code	Mfr. Part Number
1A10A6E1	293310-001	1	TERMINAL SOLDER	71279	1597-2-01
J10	299235-001	2	CONNECTOR:RT ANGLE	98291	51-353-0000
J11	299235-001		CONNECTOR:RT ANGLE	98291	51-353-0000
L1	299237-044	1	INDUCTOR:FXD MOLDED 10.0UH	99800	1025-044
L2	231105-003	18	INDUCTOR:VAR .44UH	56872	231105-003
L3	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L4			NOT USED		
L5	299237-048	7	INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L6	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L7	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L8	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L9	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L10	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L11	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L12	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L13	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L14	299237-048		INDUCTOR:VSD MOLDED 15UH	99800	1025-048
L15	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L16			NOT USED		
L17	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L18	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L19	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L20	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L21	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L22	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L23	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L24	231105-003		INDUCTOR:VAR .44UH	56872	231105-003
L25			NOT USED		
L26	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L27	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L28	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L29	299237-048		INDUCTOR:FXD MOLDED 15UH	99800	1025-048
L30	299237-012	2	INDUCTOR:FXD MOLDED .47UH	99800	1025-012
L31	299237-012		INDUCTOR:FXD MOLDED .47UH	99800	1025-012
M1	231104-001	1	MIXER	15542	SRA-1
Q1	299239-001	2	TRANSISTOR:NPN SI	04713	2N5179
Q2	299239-001		TRANSISTOR:NPN SI 1.5K	04713	2N5179
R1	299701-152	2	RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J
R2	299701-622	4	RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R3	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R4	299701-681	1	RESISTOR:FXD CAR 680 OHM $\pm 5\%$ 1/4W	01121	RC07GF681J
R5			NOT USED		
R6	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R7	299701-622		RESISTOR:FXD CAR 6.2K $\pm 5\%$ 1/4W	01121	RC07GF622J
R8	299701-471	1	RESISTOR:FXD CAR 470 OHM $\pm 5\%$ 1/4W	01121	RC07GF471J
R9	299701-152		RESISTOR:FXD CAR 1.5K $\pm 5\%$ 1/4W	01121	RC07GF152J

Table 5-2. Manufacturers Federal Supply Code

Vendor Code	Manufacturer	Address
00779	Amp Incorporated	PO Box 3608 Harrisburg, PA 17105
01121	Allen-Bradley Company	1201 South Second Street Milwaukee, WI 53204
01295	Texas Instruments Inc.	PO Box 225012-MS-84 Dallas, TX 75265
04713	Motorola Semi-Conductor Products	PO Box 20912 Phoenix, AZ 85036
05245	Corcom Incorporated	1600 Winchester Road Libertyville, IL 60048
08730	Vemaline Products Division	487 Jefferson Blvd. Warwick, RI 02886
13409	Sensitron Semi-Conductor	221 West Industry Court Deer Park, NY 11729
14655	Cornell-Dublier Electronics	150 Avenue L Newark, NJ 07105
15542	Mini-Circuits Lab.	2625 East 14th Street Brooklyn, NY 11235
18324	Signetics Corporation	811 East Arques Avenue Sunnyvale, CA 94086
28480	Hewlett-Packard Corporation	1501 Page Mill Road Palo Alto, CA 94304
28875	IMC Magnetism Corporation	Route 16B, Rochester, NH 03867
31433	Kemet, Union Carbide Corporation	PO Box 5928 Greenville, SC 29606
52763	Stettner-Trush Incorporated	67 Albany Street Cazenovia, NY 13035
56289	Sprague Products Company	481 Marshall Street North Adams, MA 01247

Table 5-2. Manufacturers Federal Supply Code (Cont)

Vendor Code	Manufacturer	Address
56872	Eaton Corporation Electronic Instrumentation Division	2070 Fifth Avenue Ronkonkoma, NY 11779
71279	Cambridge Thermionic Corporation	445 Concord Avenue Cambridge, MA 02138
72136	Electro Motive Mfg Company	Williamantic, CT 06226
72314	Fairchild Camera and Instrument Corporation	464 Ellis Street Mountain View, CA 94042
72982	Erie Technological Products	PO Box 961 Erie, PA 16512
75915	Littelfuse, Incorporated	800 East Northwest Highway Des Plaines, IL 60016
91293	Johanson Mfg., Company	Boonton, NJ 07005
91662	Elco Corporation	Huntingdon Industrial Park Huntingdon, PA 16652
93958	Republic Electronics Corporation	176 E. 7th Street Paterson, NJ 07524
95146	Alco Electronic Products	1551 Osgood Street North Andover, MA 01845
95275	Vitramon North America, Division Vitramon, Inc.	PO Box 544 Bridgeport, CT 06601
98291	Sealectro Corporation	225 Hoyt Street Mamaroneck, NY 10543
98571	Teledyne Relays	12525 Daphne Avenue Hawthorne, CA 90250
99800	Delevan Division American Precision Inds.	270 Quaker Road East Aurora, NY 14052

